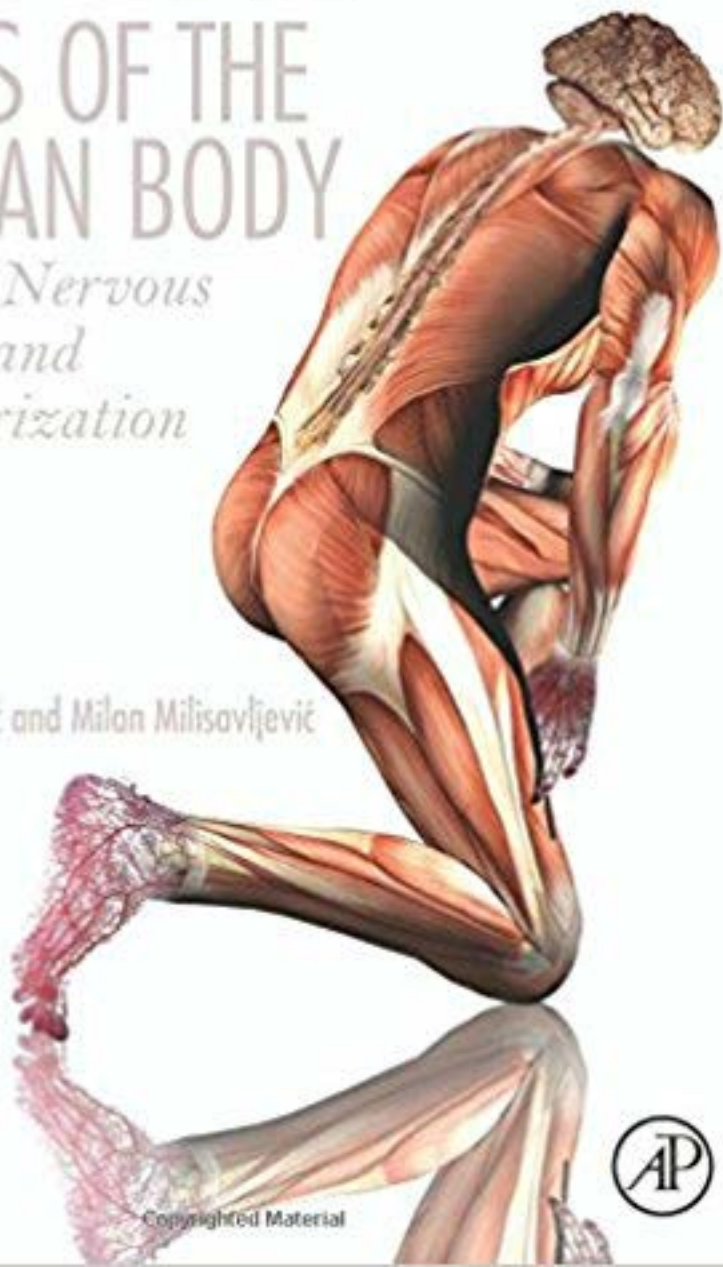


ATLAS OF THE HUMAN BODY

*Central Nervous
System and
Vascularization*

Branislav Vidić and Milon Milisavljević



Atlas of the Human Body

Central Nervous System and Vascularization

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ACADEMIC PRESS

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Academic Press is an imprint of Elsevier
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525 B Street, Suite 1800, San Diego, CA 92101-4495, United States
50 Hampshire Street, 5th Floor, Cambridge, MA 02139, United States
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Library of Congress Cataloging-in-Publication Data

A catalog record for this book is available from the Library of Congress

British Library Cataloguing-in-Publication Data

A catalogue record for this book is available from the British Library

ISBN: 978-0-12-809410-5

For information on all Academic Press publications visit our website at
<https://www.elsevier.com/books-and-journals>



Publisher: Mica Haley

Acquisition Editor: Stacy Masucci

Editorial Project Manager: Sam Young

Production Project Manager: Edward Taylor

Designer: Matthew Limbert

Typeset by Thomson Digital

Preface

Anatomy is one of the oldest medical sciences that still continues today, and is the foundation for the study and practice of the medical arts. It provides, first of all, the basic vocabulary of the medical world and the necessary skills required in solving health–disease problems in three-dimensional space. By sequentially dissecting a region, the anatomical analysis leads to a gradually expanding appreciation of the entire makeup of the human body. This process is fundamental in providing biophysical data for subsequent conceptual elaboration and integration of morphological data into a meaningful functional complex. Dissection, considered the most ancient method of studying an anatomical subject, survived scrutiny and the test of time throughout the history of medicine. However, it still remains a reliable method of scientific and pedagogical analysis of fundamental human structure and function, which is important for minute differential assessment between normal and abnormal conditions, as well as for the optimal treatment of abnormal (diseased) conditions.

Atlas of the Human Body, Central Nervous System and Vascularization has been written with several goals in mind. The most important one was to establish a detailed coverage of anatomical structures/relationships throughout topographic regions, as completely as it was technically possible. To avoid overcrowding of photographs by labels and to provide better visibility of images, two, three, or even more similar regional views, in some instances, have been utilized. In addition to adult specimens, a few prenatal examples were utilized to enable a better understanding of structure/relation specificity of corporal differentiation (conduits, organs, somatic, and branchial derivatives) at various developmental intervals. Another quest of this Atlas was to systematically present arterial distribution, up to the precapillary level, using the “methyl methacrylate injection and subsequent digestion of tissue” method. The resulting photographic presentation of the arterial distribution throughout topographic regions, organs, and special subregions makes this Atlas a unique and invaluable published document in the arsenal of the existing academic literature. The present Atlas, furthermore, contains a very rich collection of: surface and three-dimensional dissection images, native and colored cross-sectional views made in different plans (whenever appropriate these views were compared, side by side, with dissection images), and the distribution of blood vessels throughout body regions and central nervous system. A separate segment of Atlas is devoted to the central nervous system and its specific regions: brain, brainstem, cerebellum, and spinal cord. Each region is presented by a detailed collection of surface (dissection) and cross-sectional views, native blood vessels, and blood vessel casts. The latter collection could adequately subserve as a complete educational–visual aid for the requirements of a Neuroscience course.

Terminology used in the *Atlas of the Human Body, Central Nervous System, and Vascularization* is according to the Terminologia Anatomica (1998).

Authors express their sincere gratitude to Stacy Masucci, Senior Acquisition Editor, Elsevier Inc. and Samuel Young, Editorial Project Manager, Elsevier Inc. for unlimited assistance and help during the course of preparation of *Atlas of the Human Body, Central Nervous System and Vascularization*. Administrative help and encouragement from the Faculty of Medicine, University of Belgrade, Belgrade, Serbia, and Texas Tech University Health Science Center, Texas Tech University, Lubbock, Texas, USA are well appreciated.

We are also deeply grateful for essential scientific contributions by:

Dr. Mila Četković Milisavljević, from the Institute of Histology and Embryology, Faculty of Medicine, University of Belgrade, Serbia, for her quality, beautiful drawings and histological specimens used in this Atlas.

Dr. Zdravko Vitošević, University Professor and 2011 year Laureate of the “Brothers Karic Foundation” in Belgrade, Serbia, was wholly committed to this project and helped in the organization of scientific material throughout.

Dr. Bojan Štimatec, from the Faculty of Medicine, Department of Cellular Physiology and Metabolism, Anatomy Sector, University of Geneva, Geneva, Switzerland, who provided numerous helpful suggestions and assisted in updating the lower limb and abdomen parts of our Atlas.

Chapter 1

Upper Limb and Vascularization

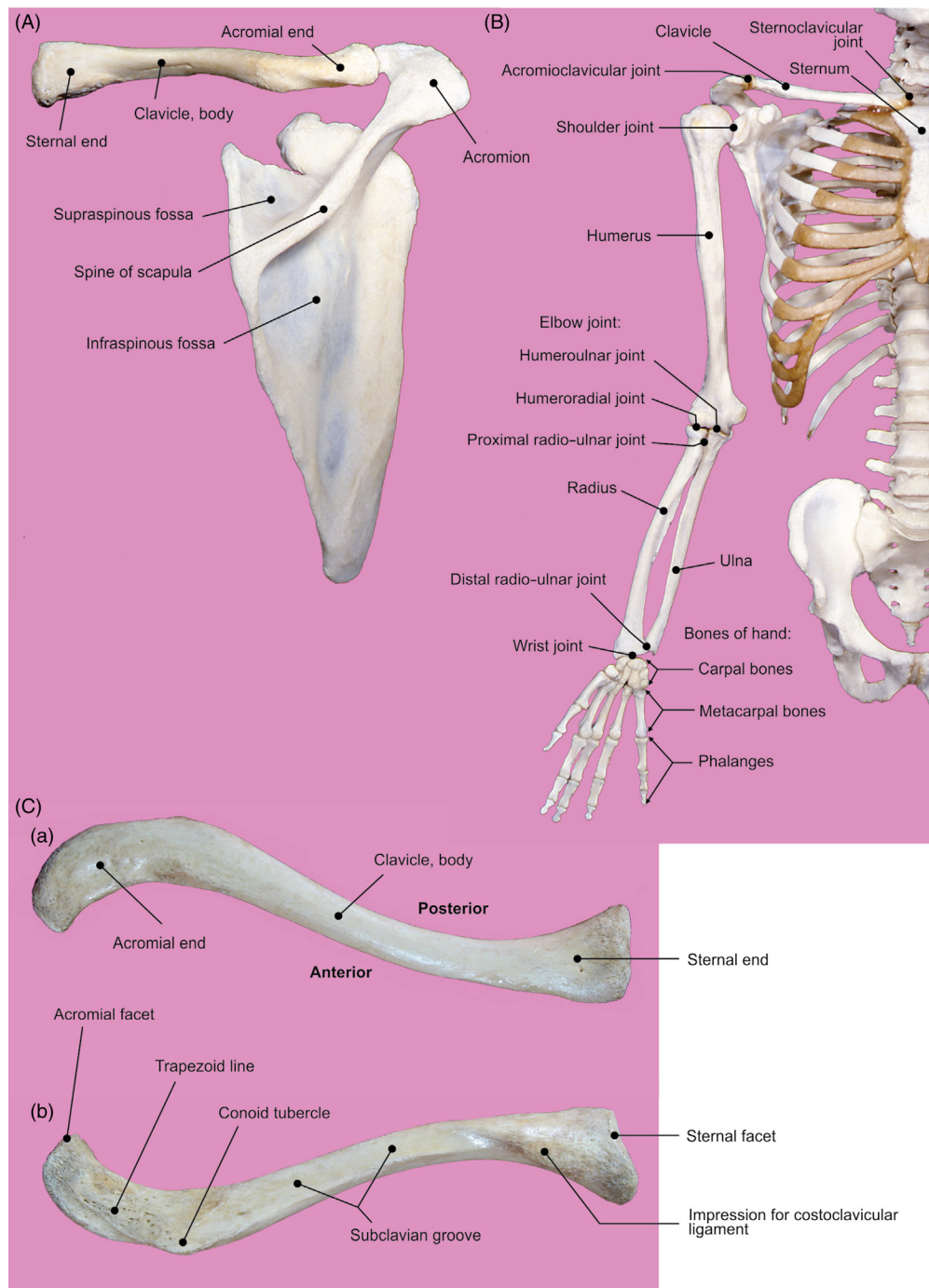


FIGURE 1.1 Skeleton of the upper limb. (A) Posterior view of the right clavicle and scapula. (B) Bones of the shoulder region. (C) Right clavicle: (a) superior and (b) inferior views.

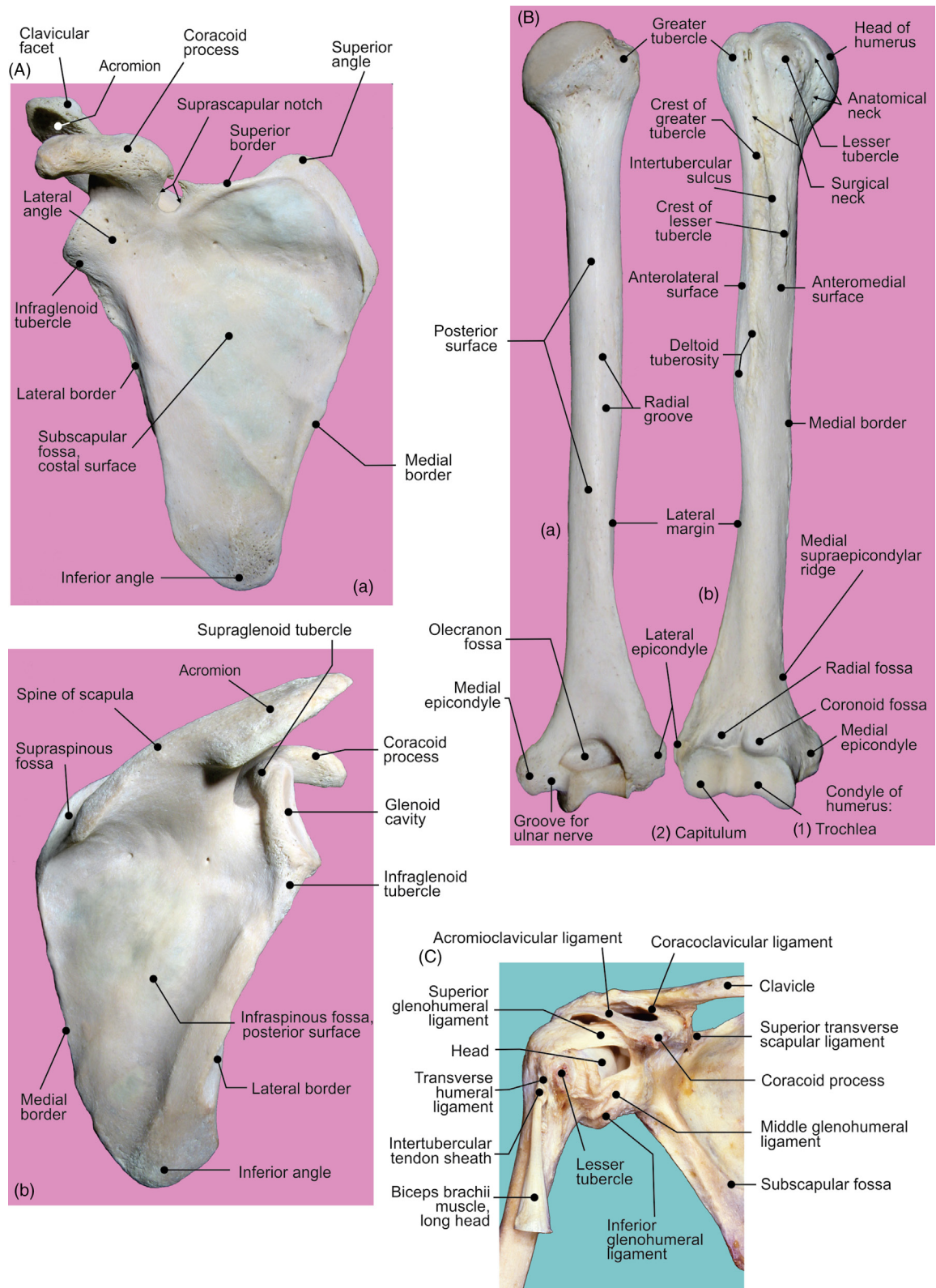


FIGURE 1.2 (A) Right scapula: (a) anterior and (b) posterior views. (B) Right humerus: (a) posterior and (b) anterior views. (C) Anterior view of the shoulder joint.

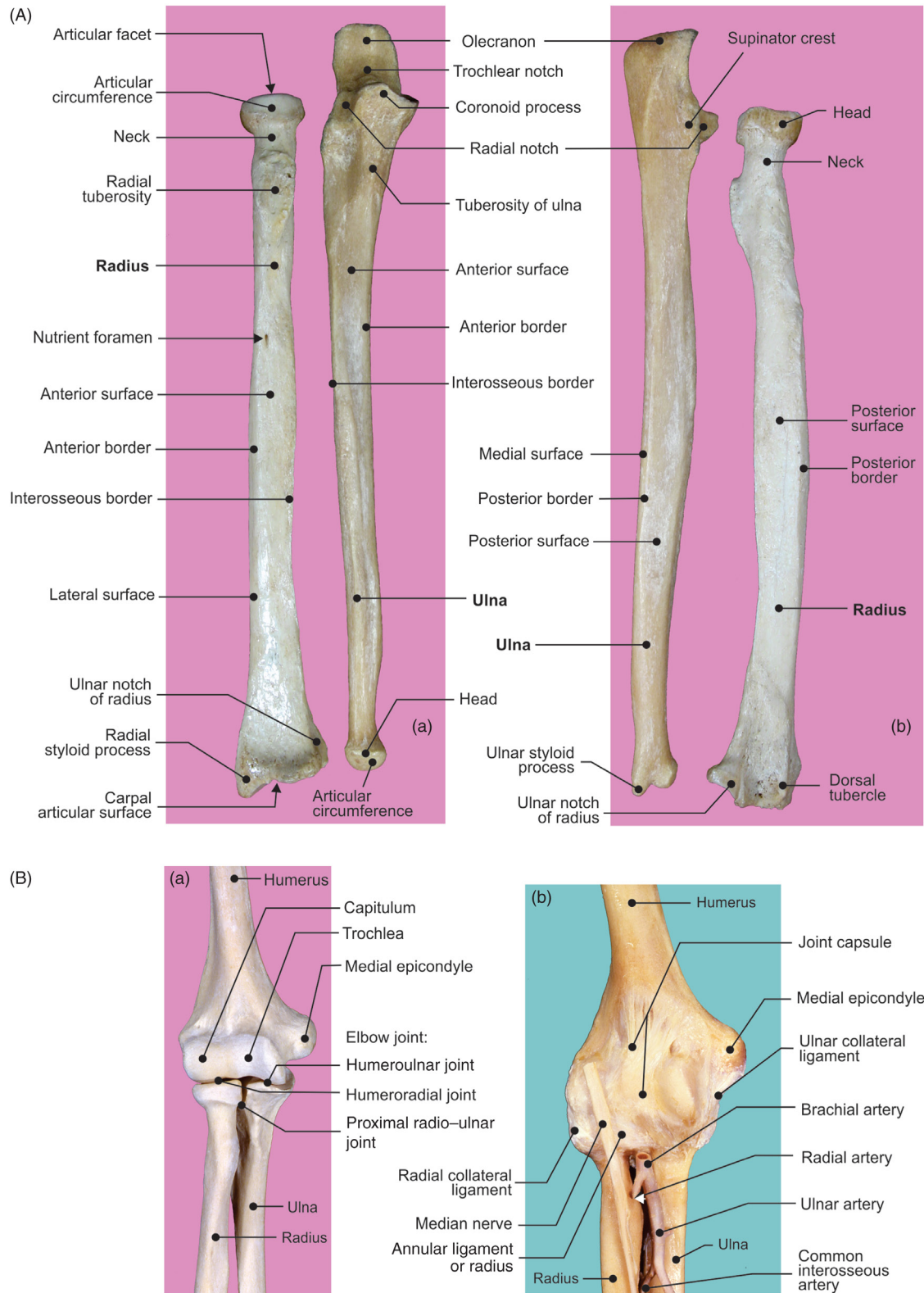


FIGURE 1.3 (A) Right forearm: (a) anterior and (b) posterior views of radius and ulna. (B) Elbow joint: anterior view (a) bones and (b) ligaments.

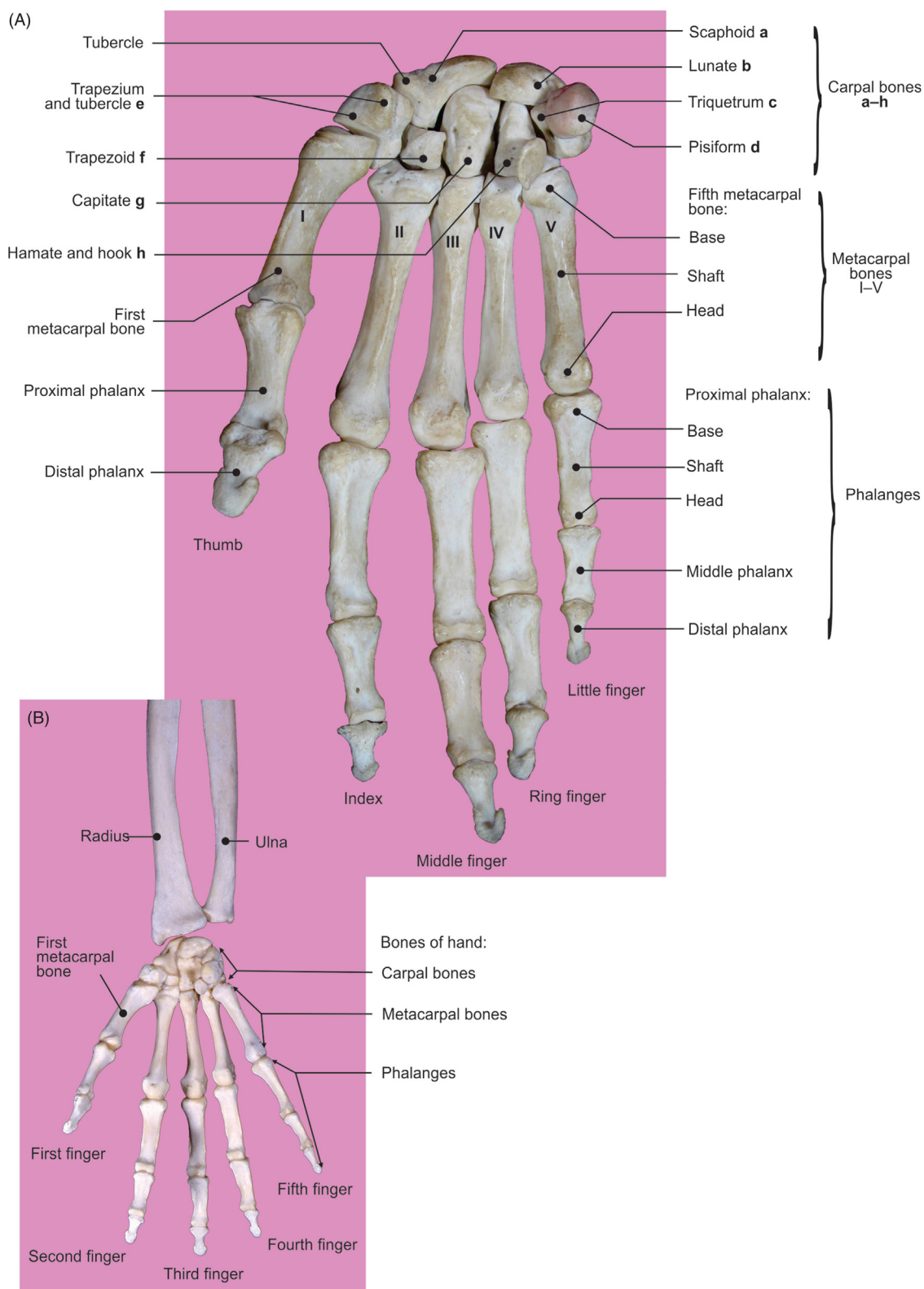


FIGURE 1.4 Palmar surfaces of hand skeleton. (A) Bones of the hand. (B) Wrist joint.

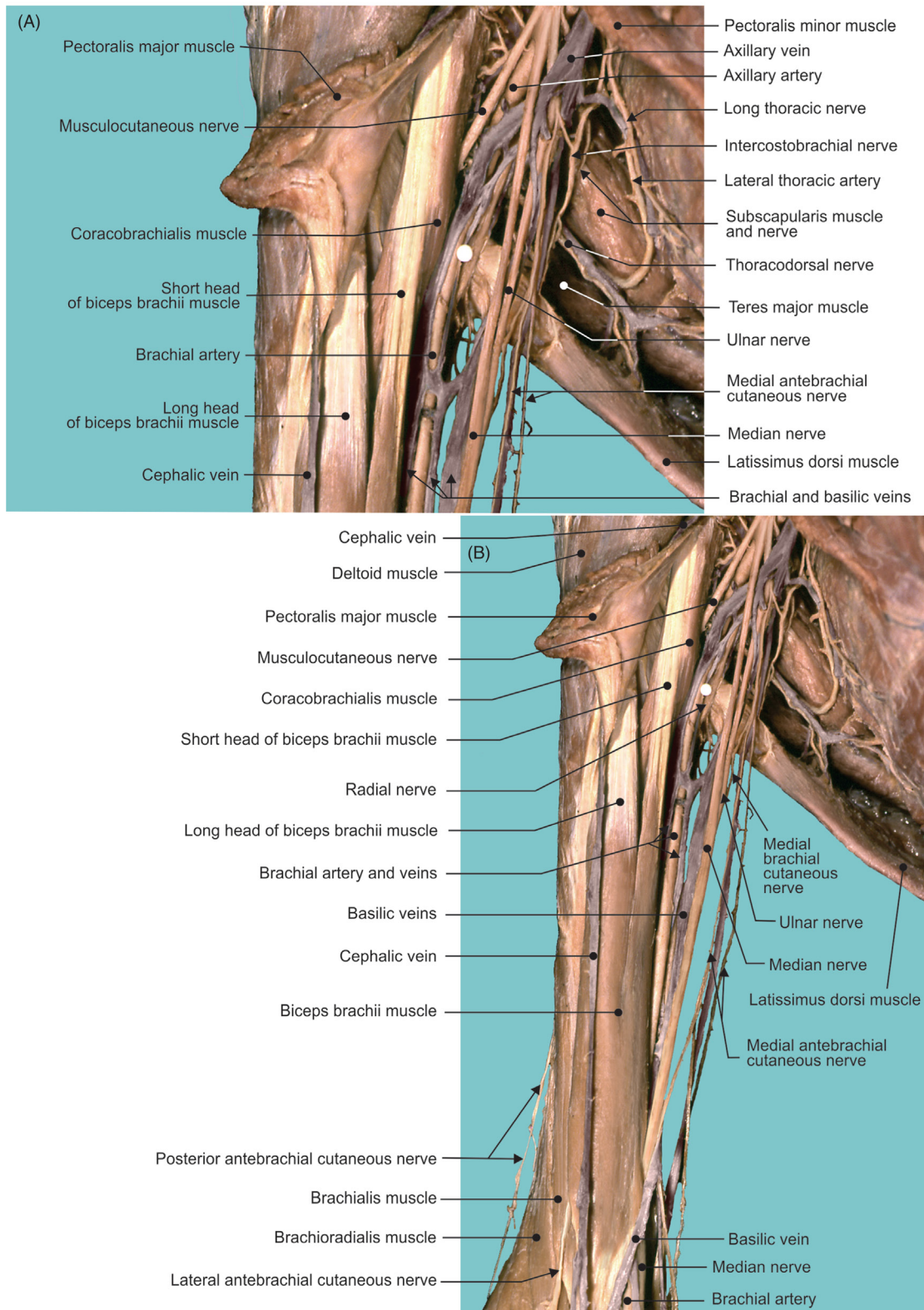


FIGURE 1.5 Anterior views of the (A) axillary and (B) brachial regions.

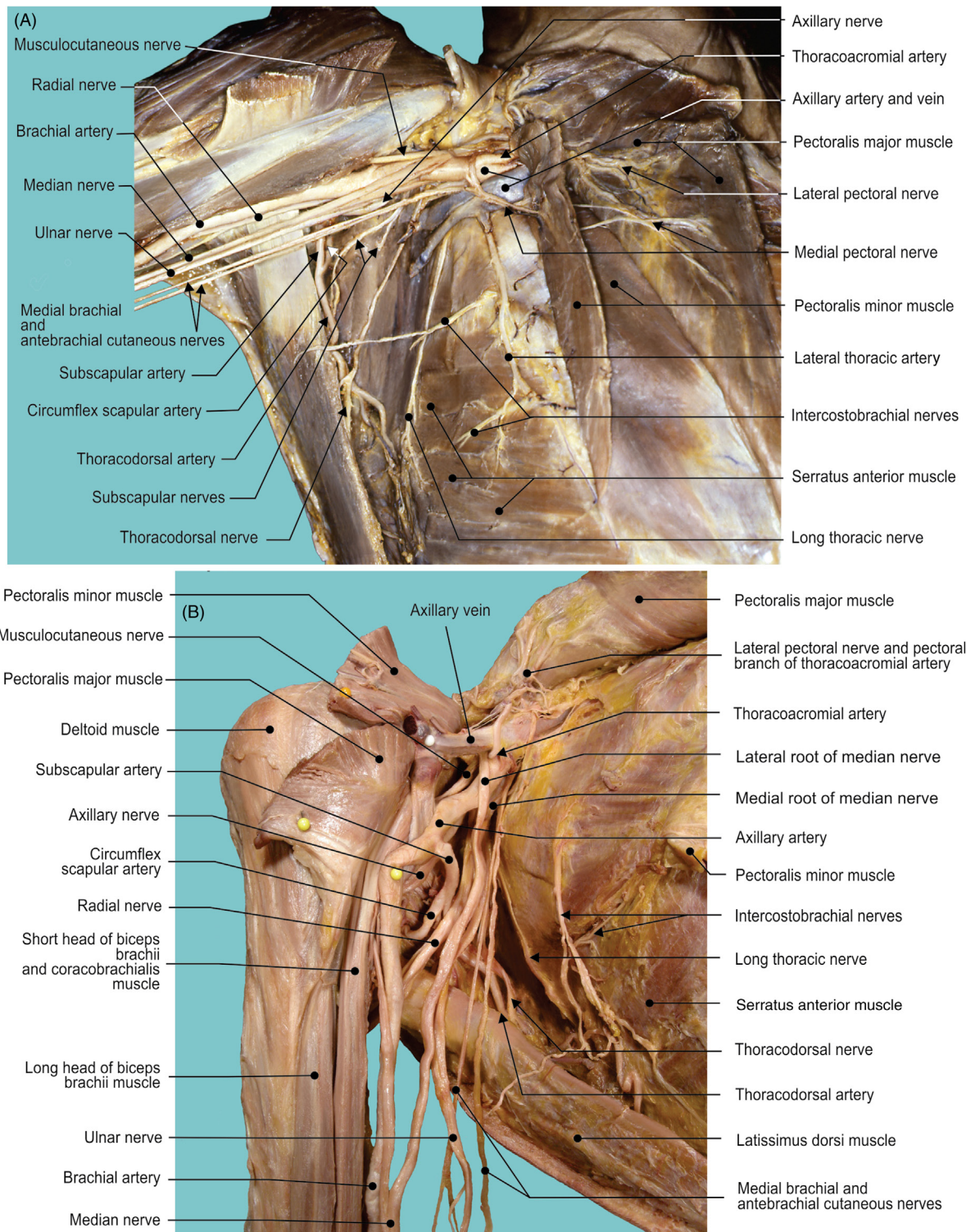
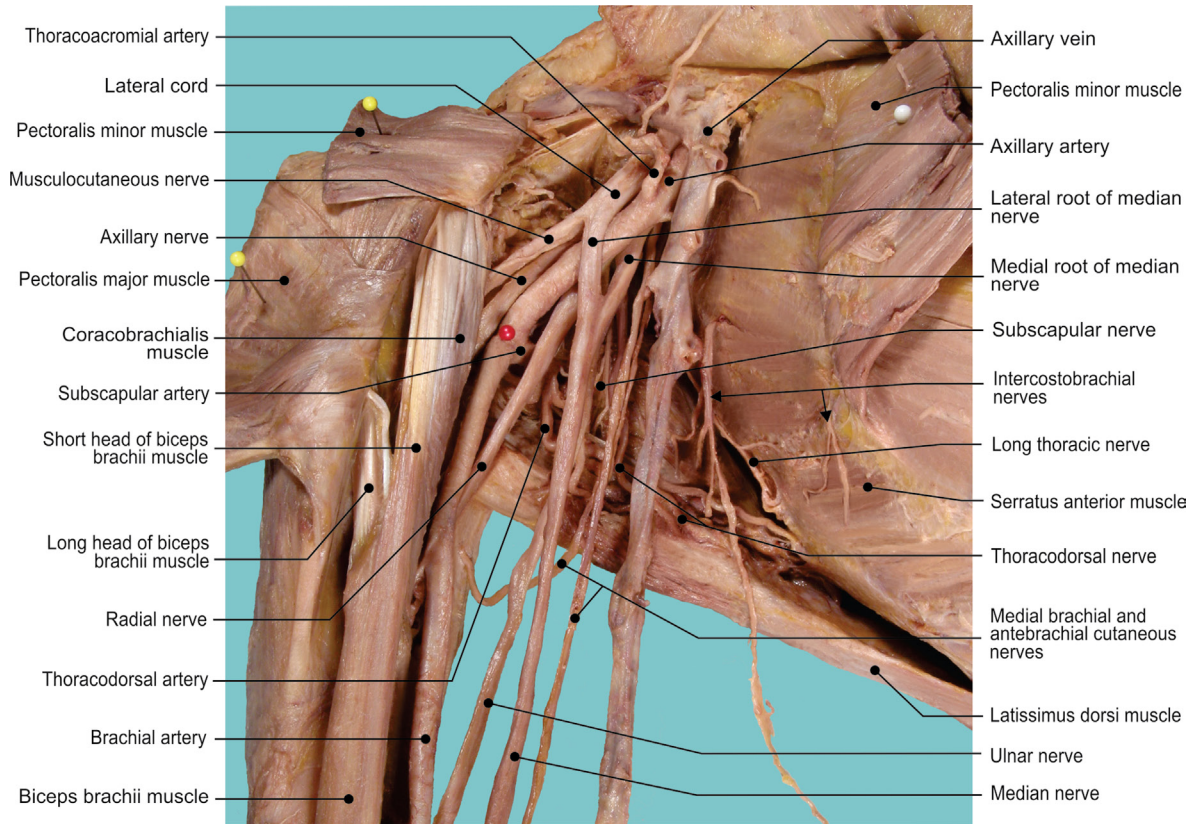
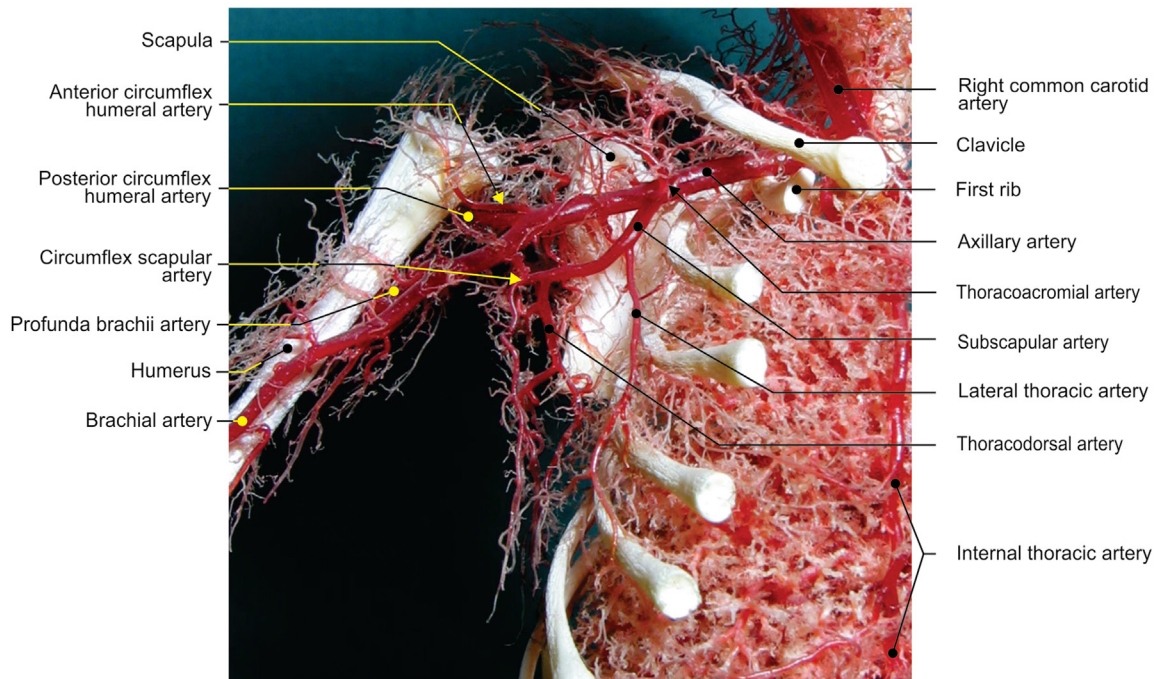


FIGURE 1.6 Anterior views of the (A) axillary and (B) brachial regions.



(A)



(B)

FIGURE 1.7 (A) Anterior view of the axillary fossa. (B) Anterior view of the fetal arterial distribution over rib cage and arm (corrosion cast).

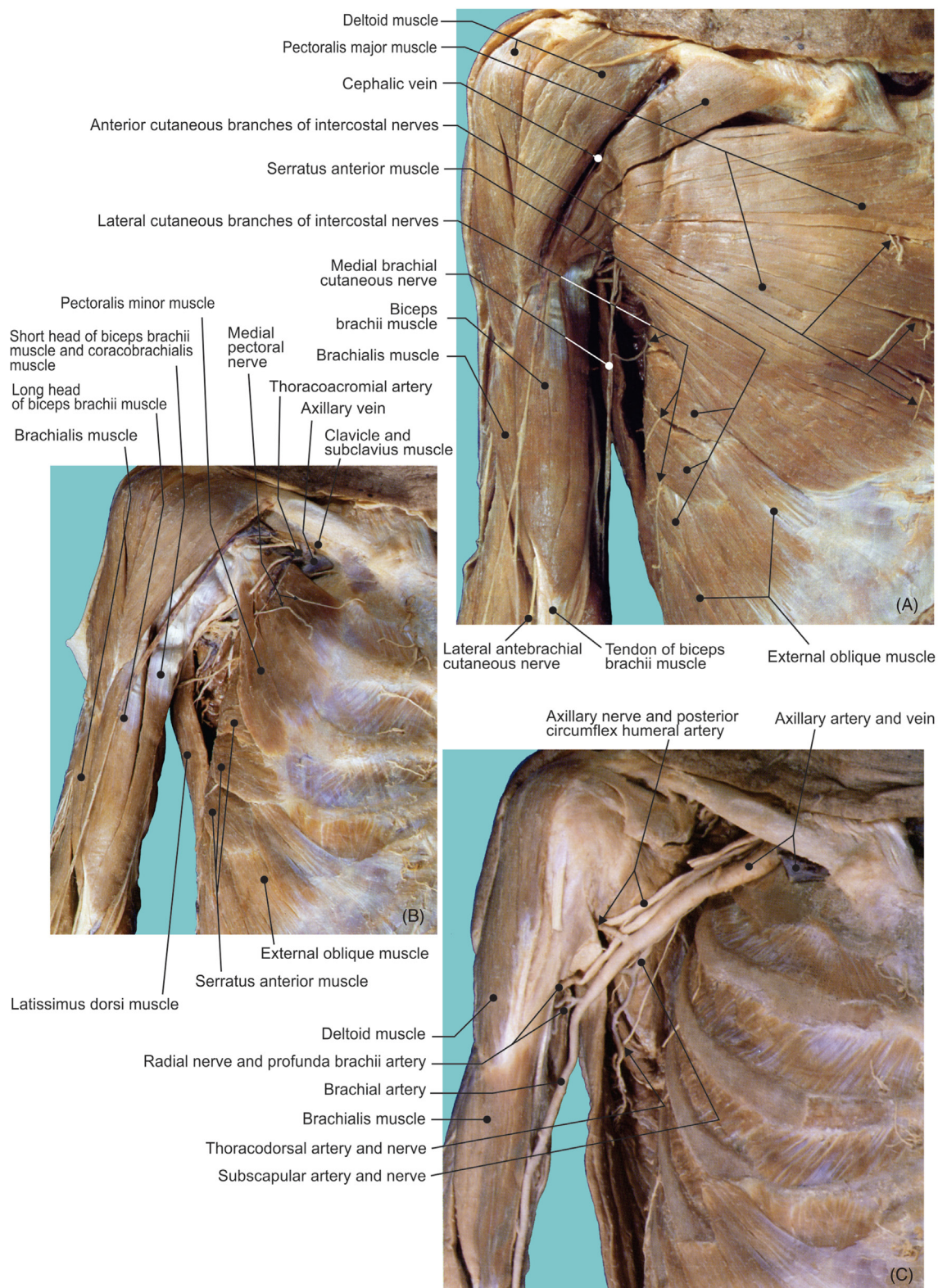


FIGURE 1.8 The pectoral region. (A) Superficial layer. (B) Deep layer. (C) Axillary fossa after the removal of medial and lateral cords of the brachial plexus.

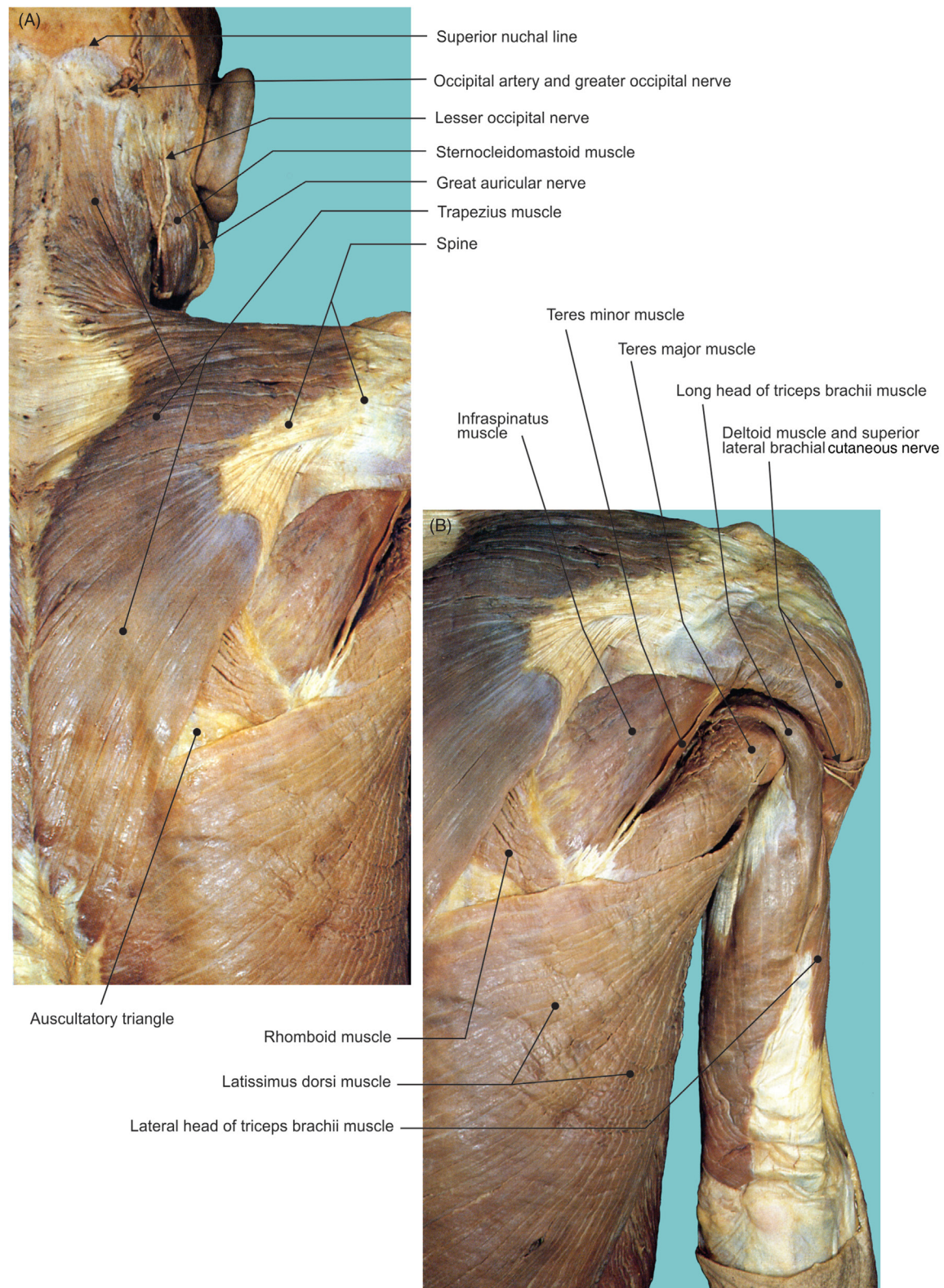


FIGURE 1.9 Superficial layer of the scapular region. (A) Scapular and (B) posterior brachial regions.

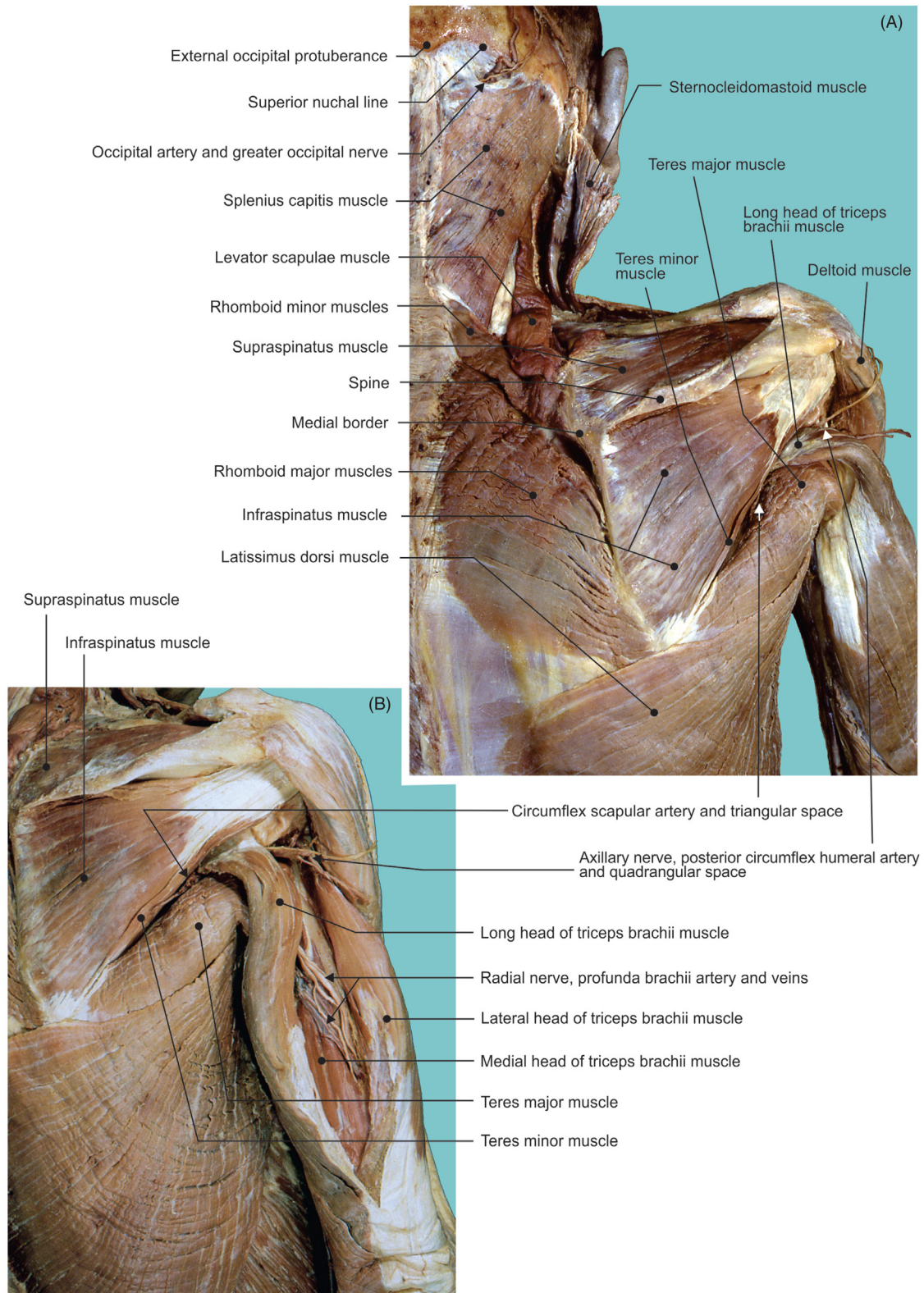


FIGURE 1.10 (A) Middle layer of the scapular region and (B) the posterior brachial region.

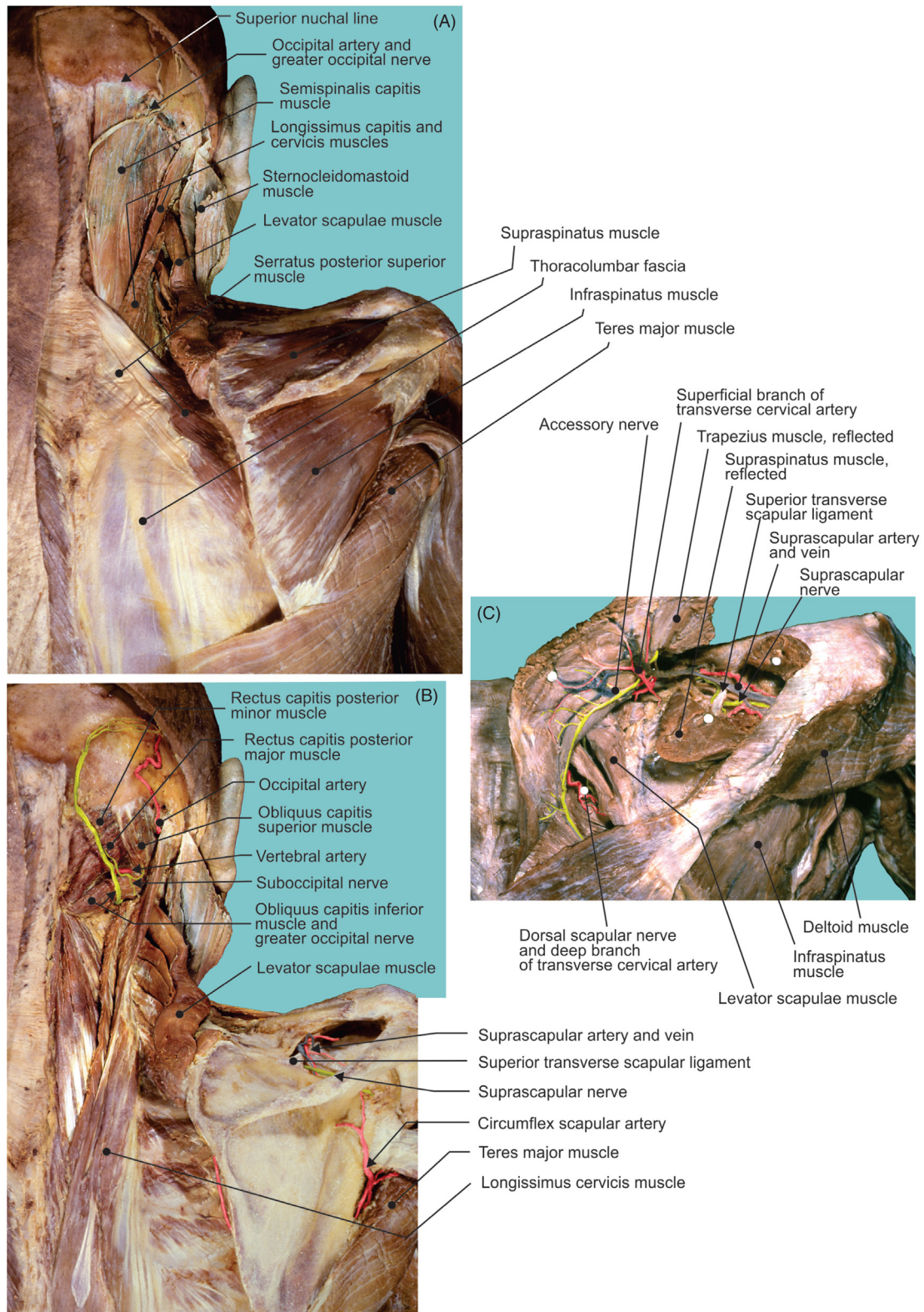


FIGURE 1.11 Deep layer of the scapular region. Illustrations of structures: (A) muscles, (B) vascularization, (C) and details.

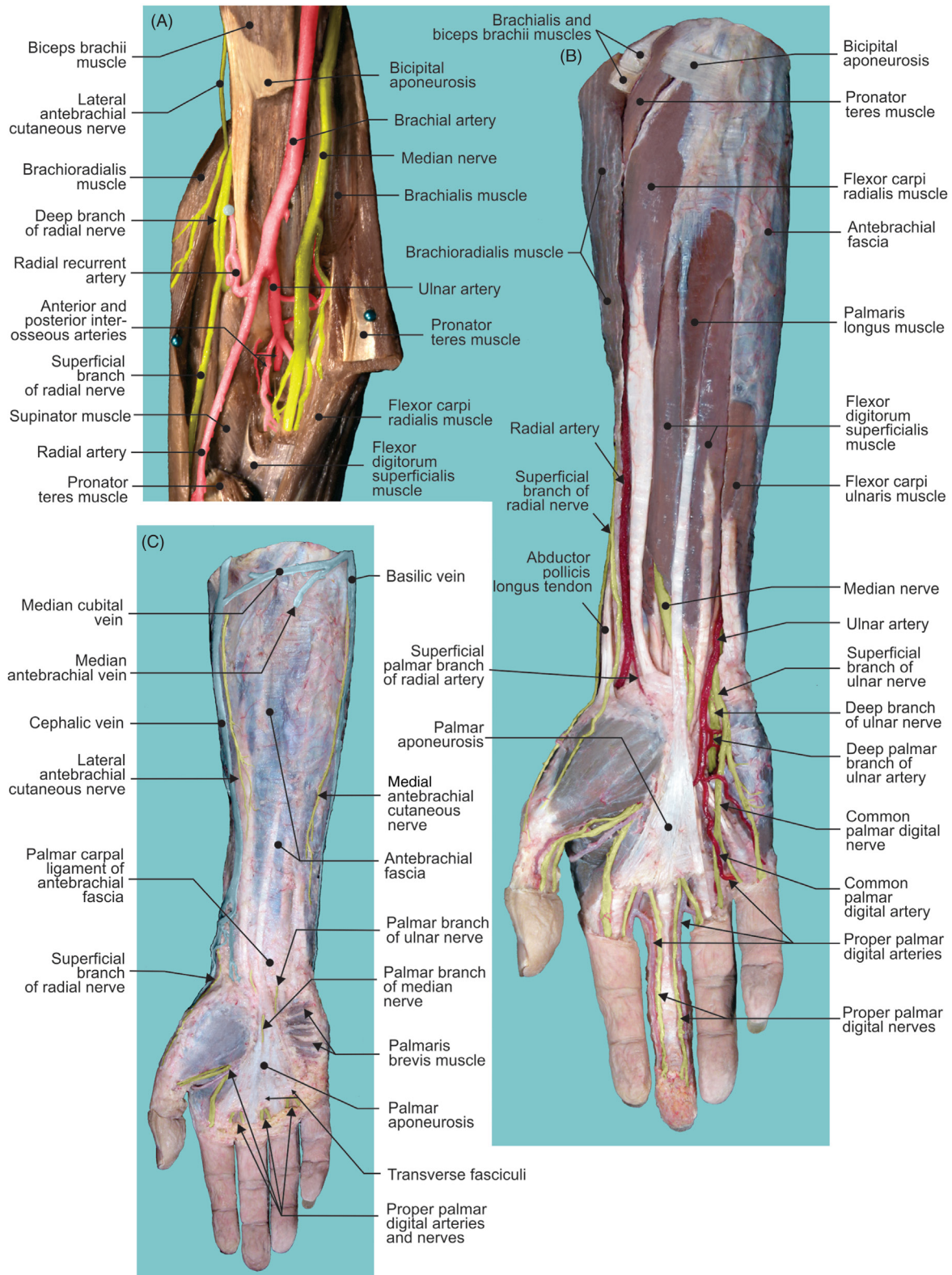


FIGURE 1.12 (A) Anterior cubital region. (B–C) Superficial layer of the anterior antebrachial region.

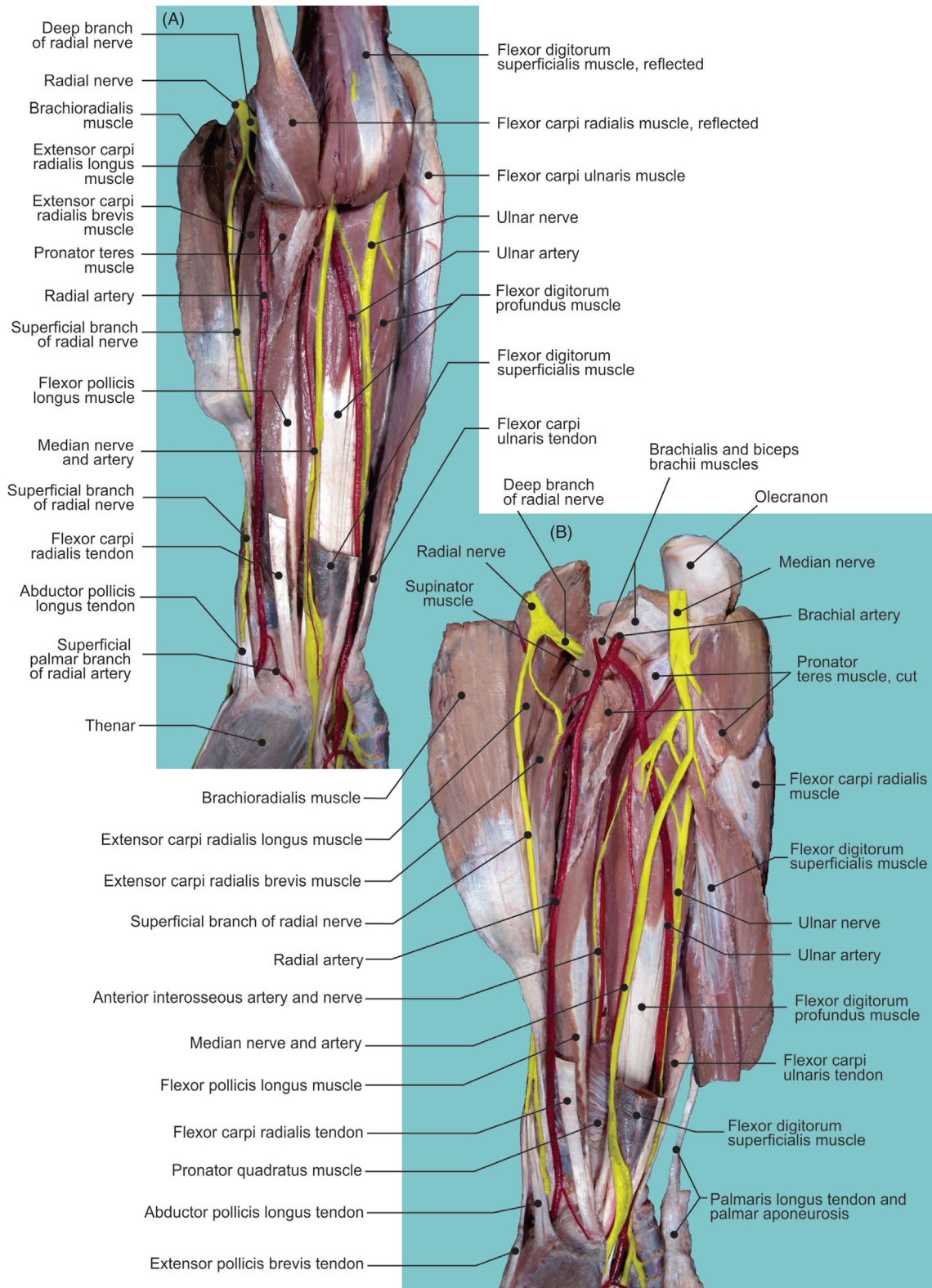


FIGURE 1.13 Deep layer (A–B) of the anterior antebrachial region.

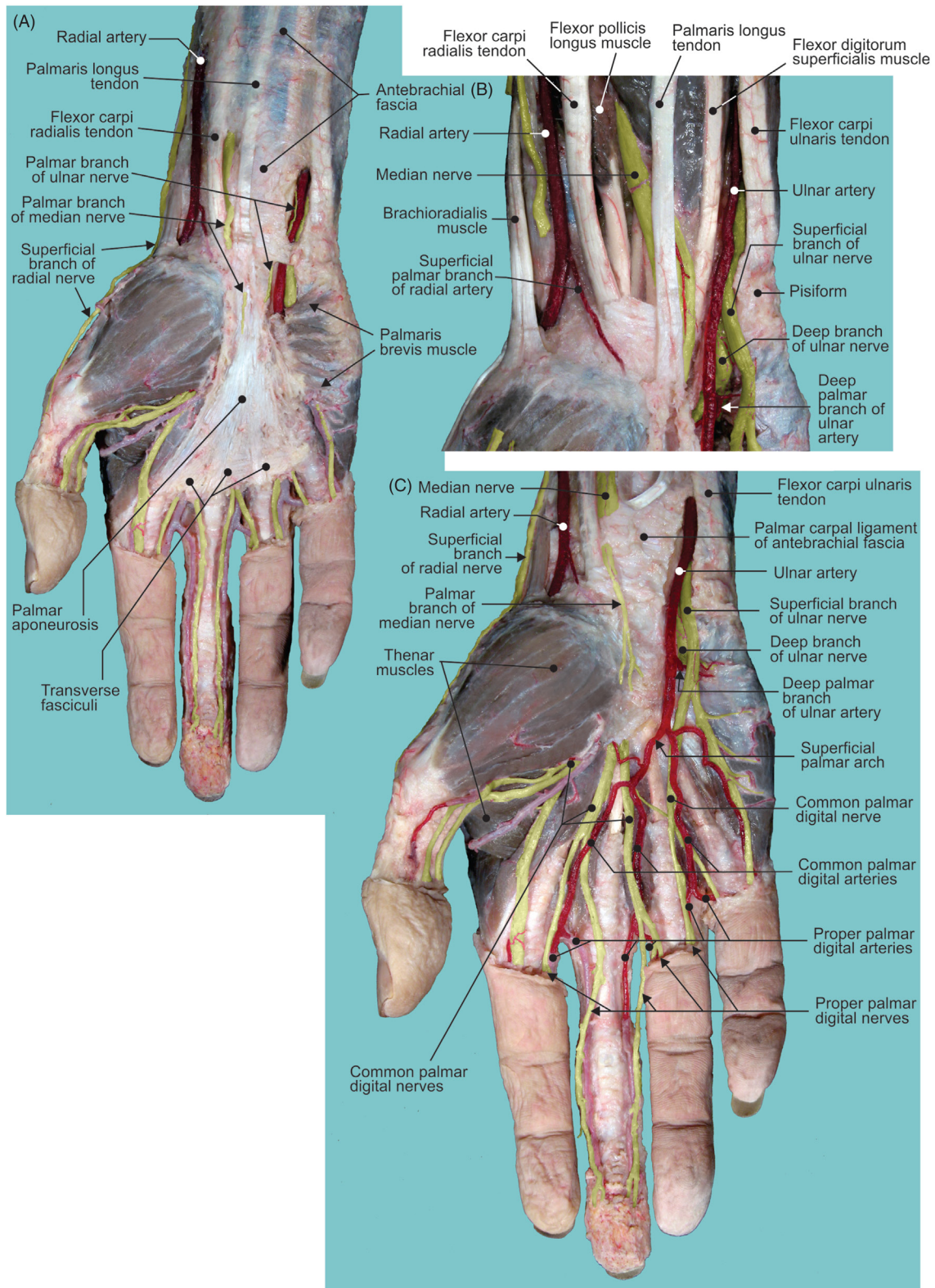


FIGURE 1.14 Superficial structures in the palmar region. (A–C) Different layers offering structural details.

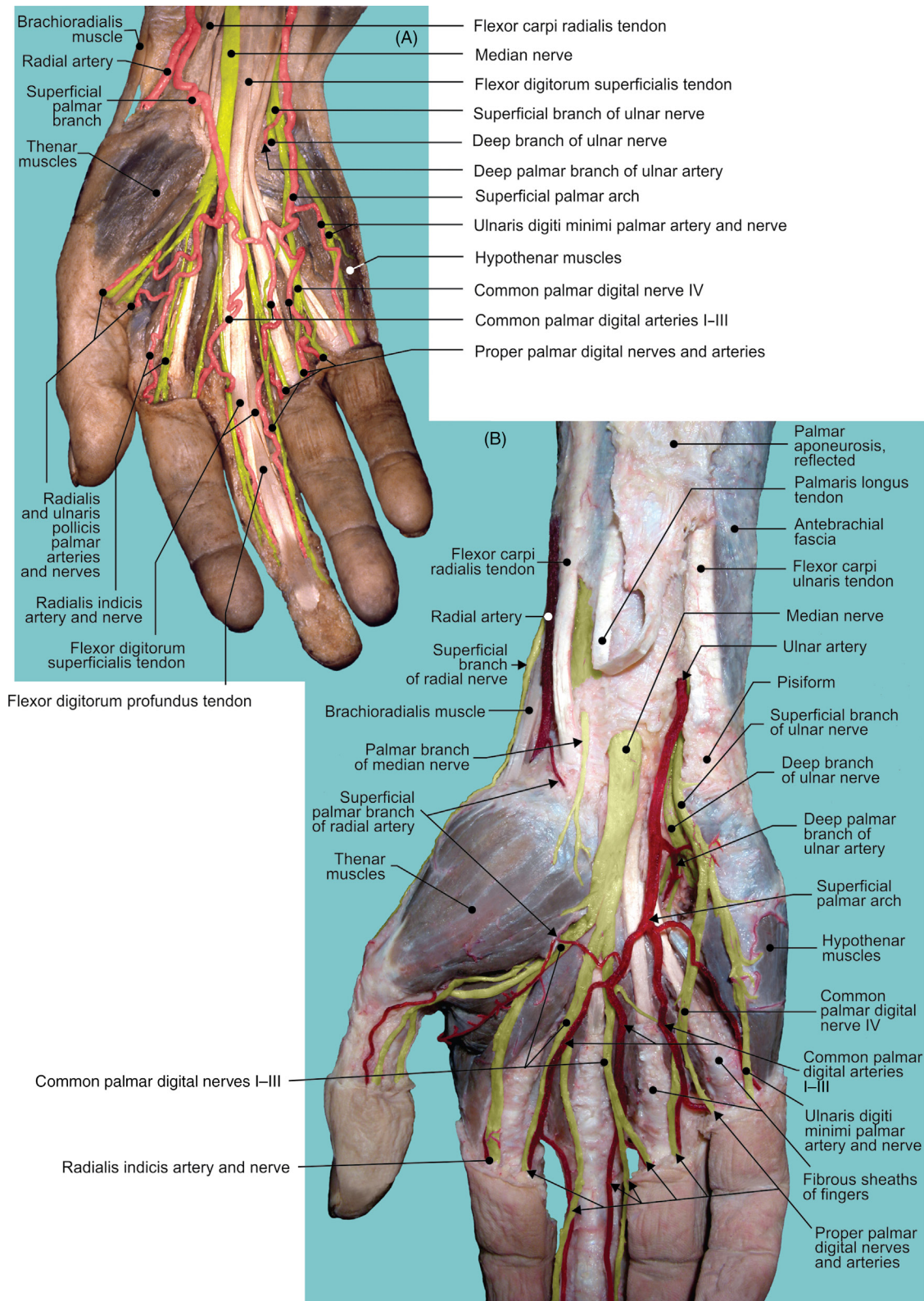


FIGURE 1.15 Structures in the palmar region deep to palmar aponeurosis. (A–B) Different specimens offering structural details.

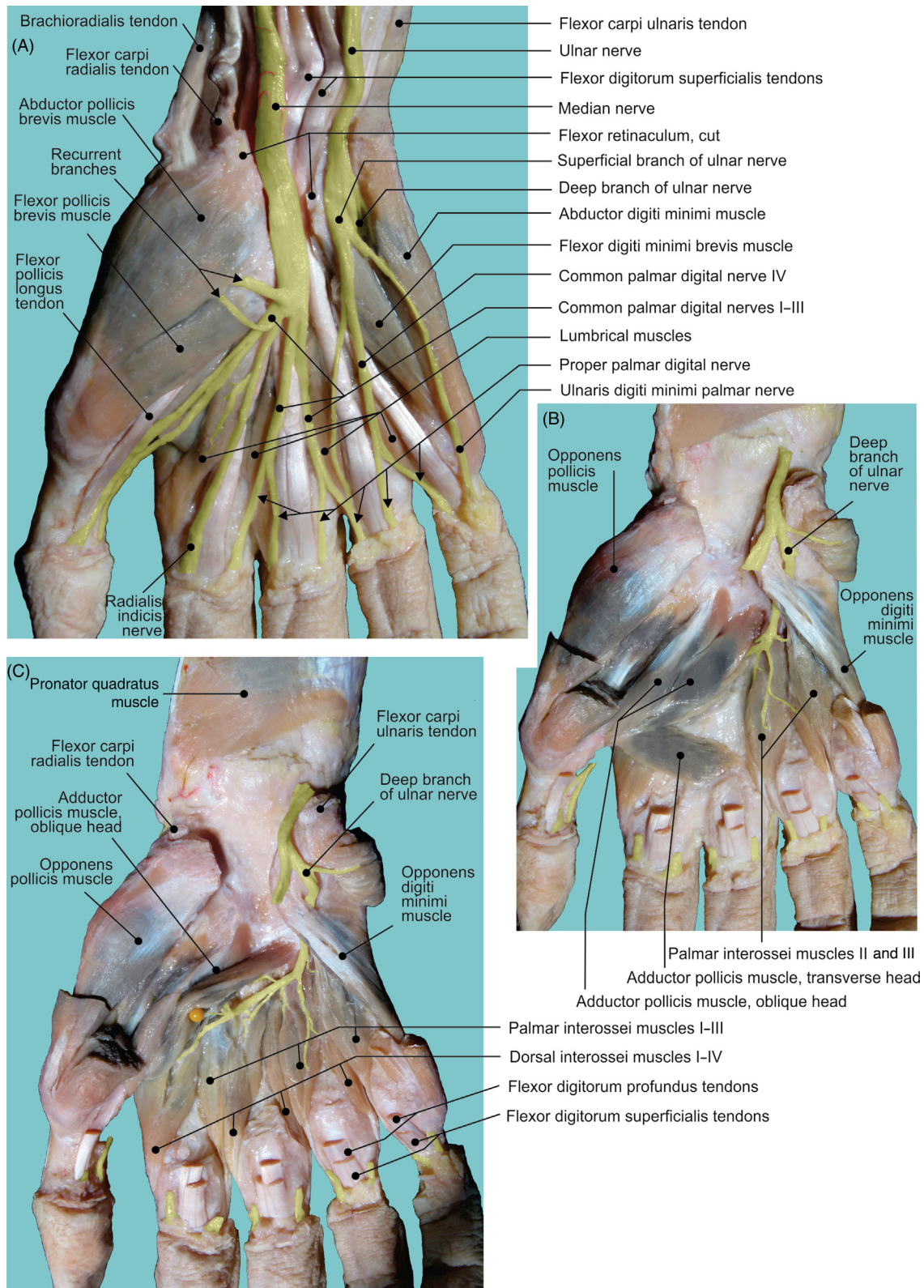


FIGURE 1.16 Structures in the deep layer of the palmar region. (A–C) Different layers offering structural details.

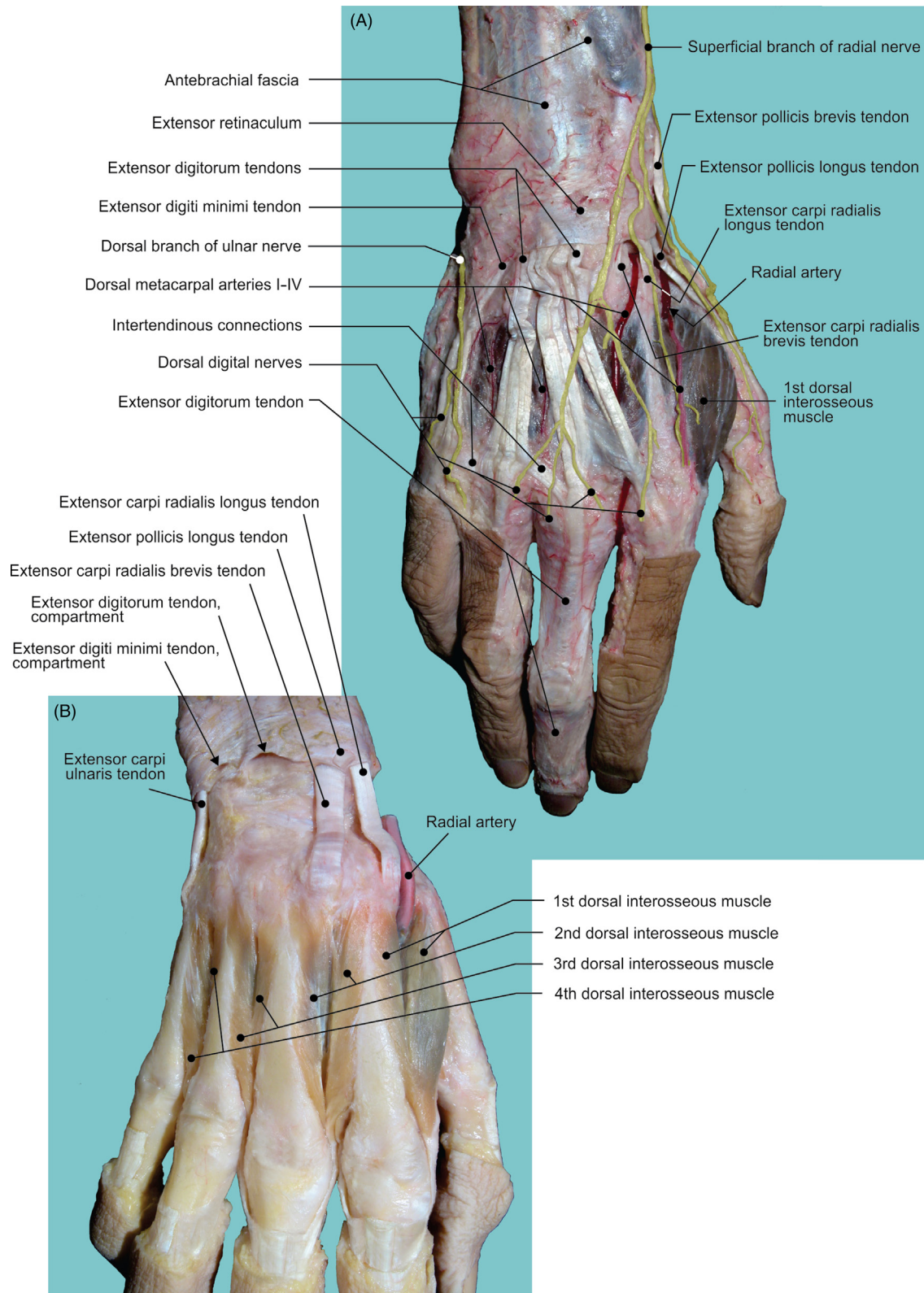


FIGURE 1.17 Structures in the posterior region of the hand. (A–B) Different layers offering structural details.

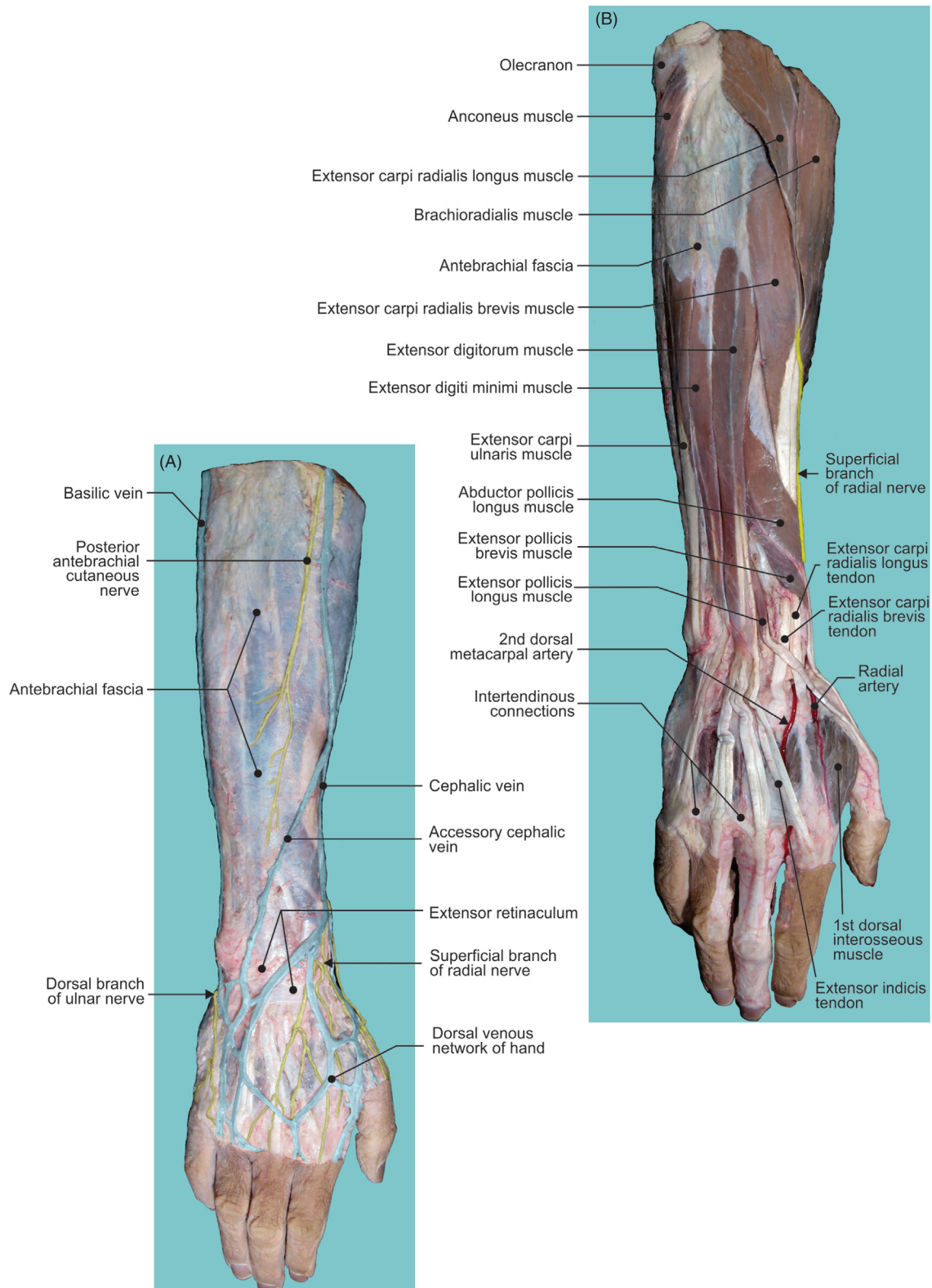


FIGURE 1.18 (A) Structures in the subcutaneous and (B) superficial layers of the posterior antebrachial and hand regions.

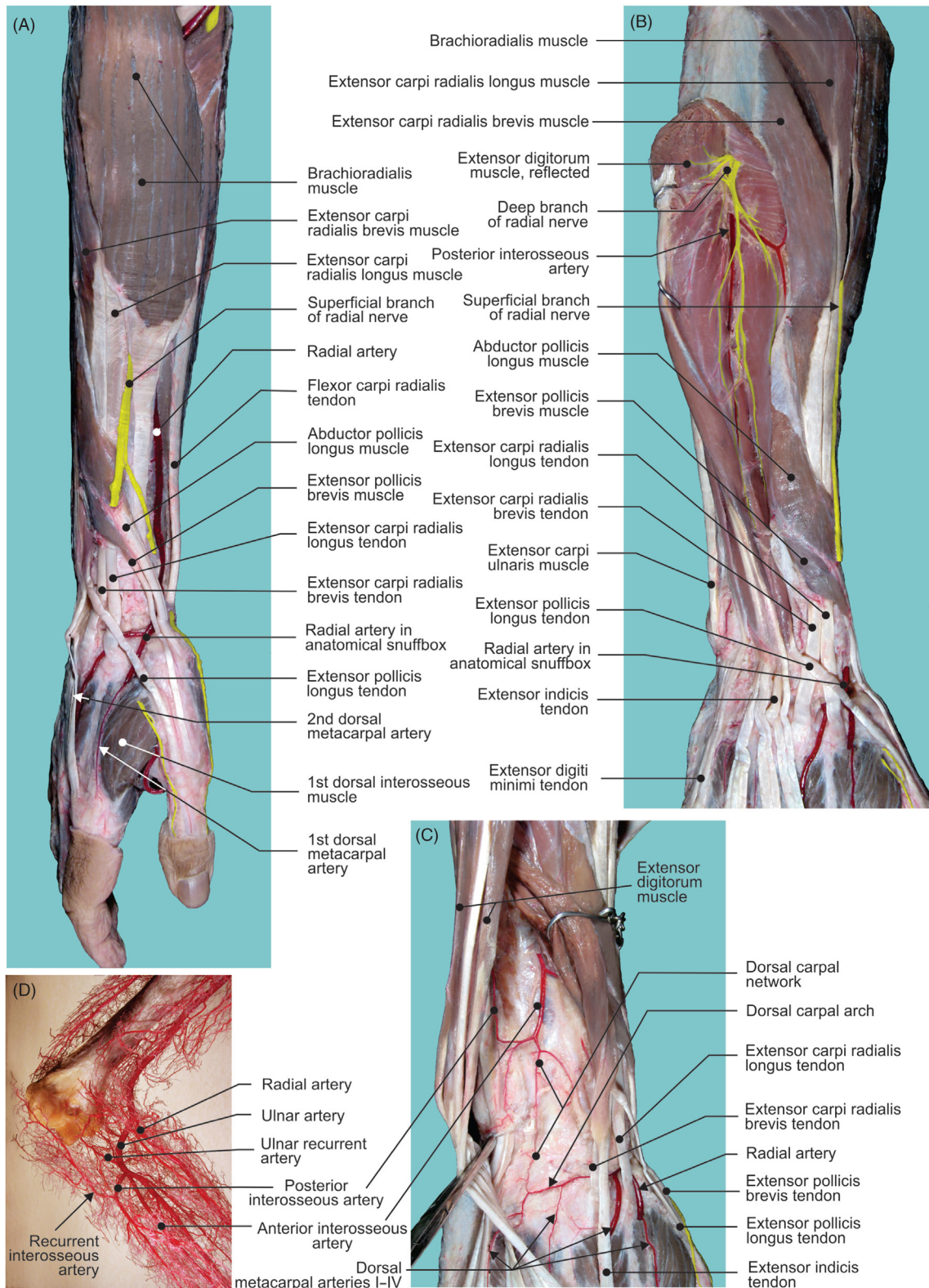


FIGURE 1.19 (A) Superficial and (B–C) deep structures of the posterior antebrachial and carpal regions. (D) Corrosion cast of arterial network around the elbow joint.

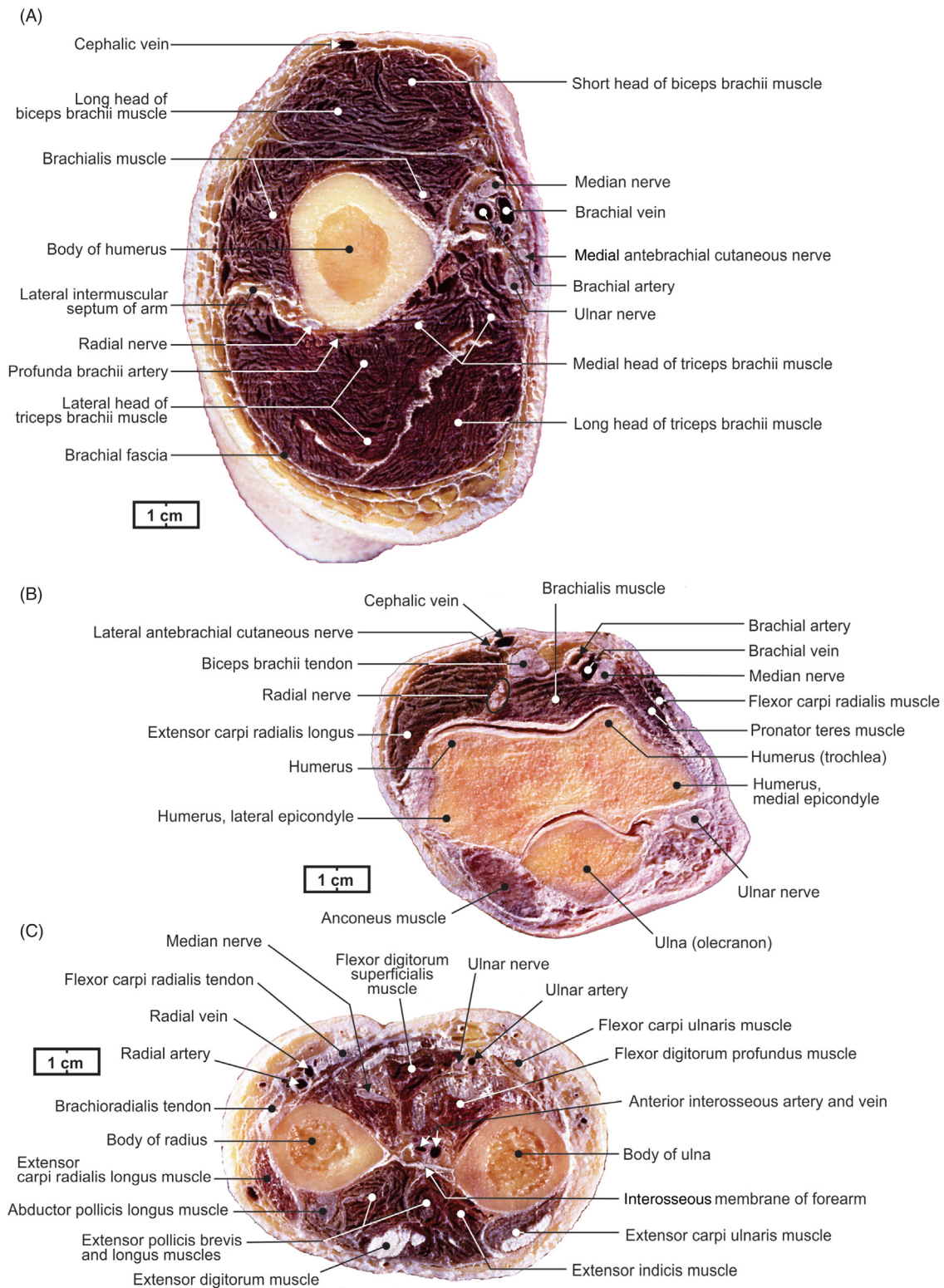


FIGURE 1.20 Transverse cross-sectional views of the right (A) arm, (B) elbow joint, and (C) forearm.

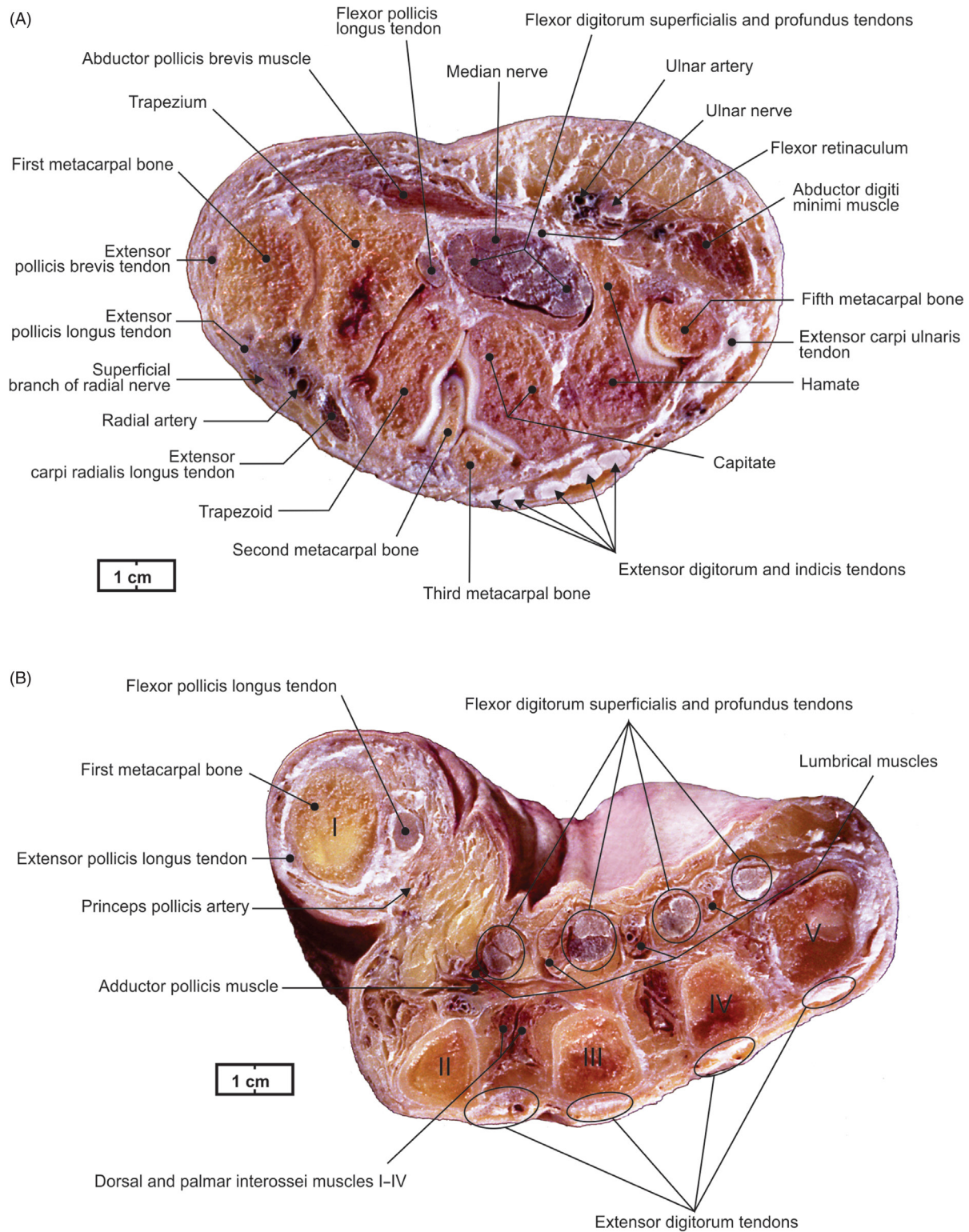


FIGURE 1.21 Transverse cross-sectional views of the right (A) carpal and (B) metacarpal regions.

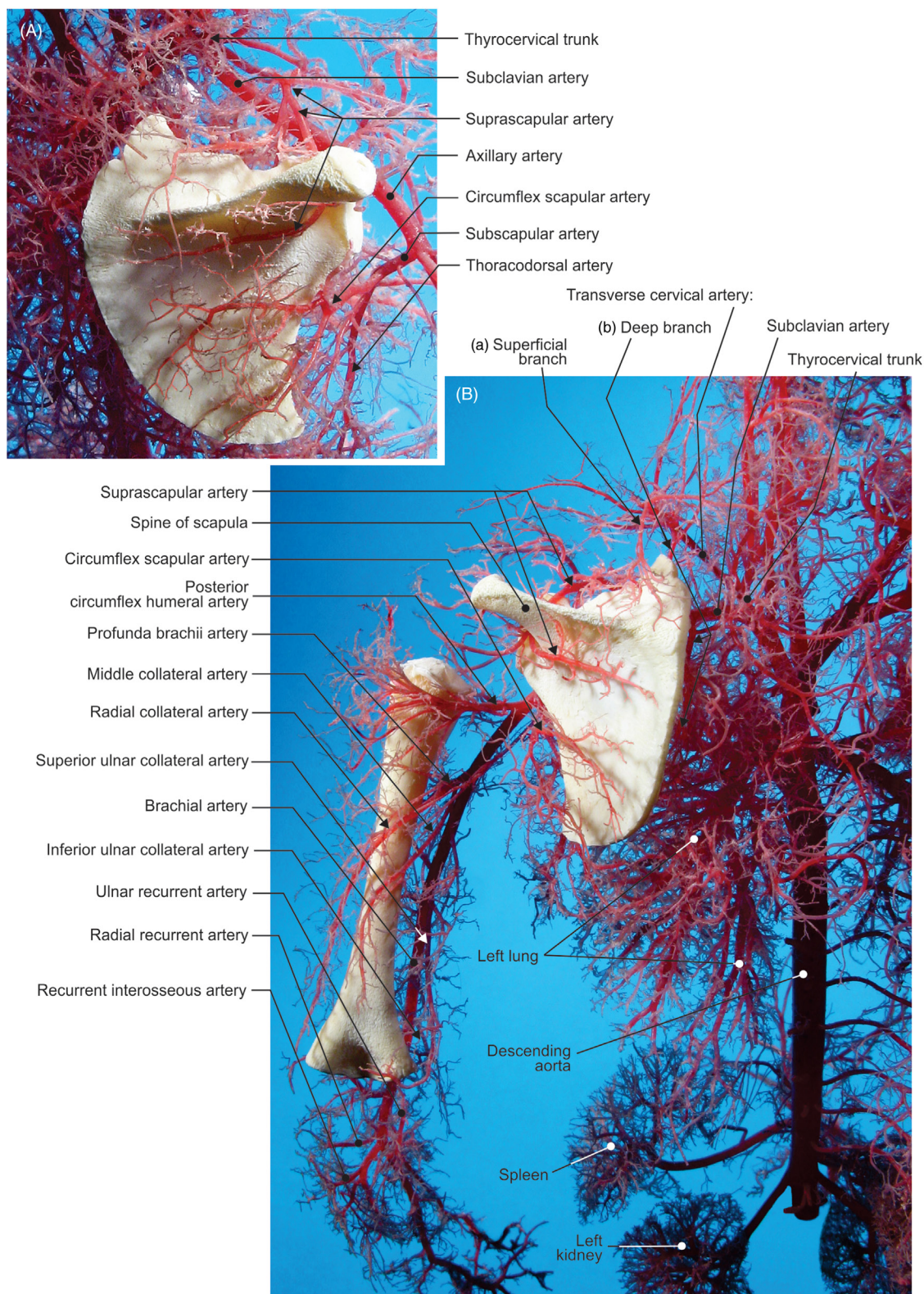


FIGURE 1.22 Fetal arterial corrosion casts on the posterior aspects of (A) scapula and (B) scapula, brachium, and elbow.

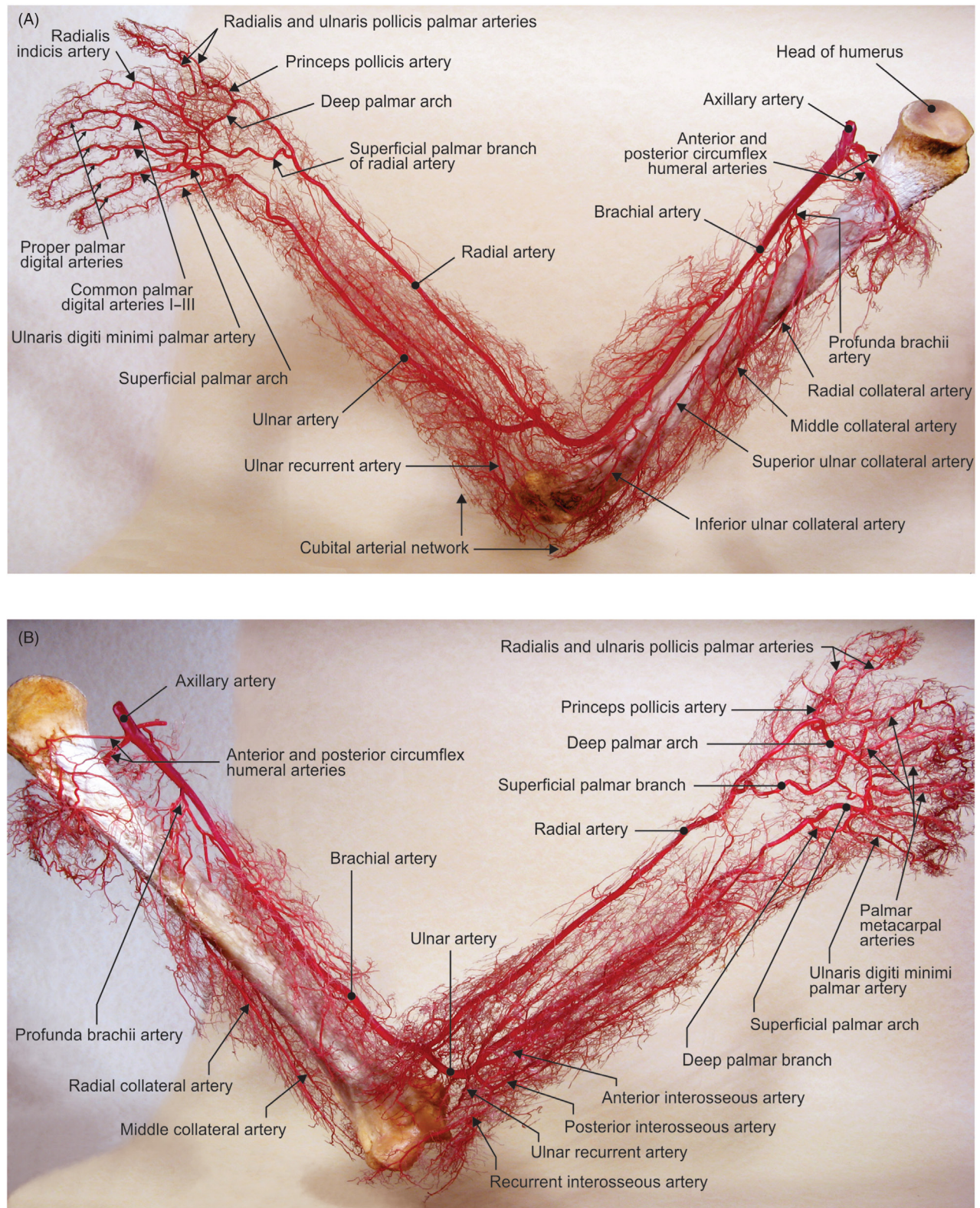


FIGURE 1.23 Arterial corrosion cast of the right upper limb. (A) Medial and (B) lateral views.

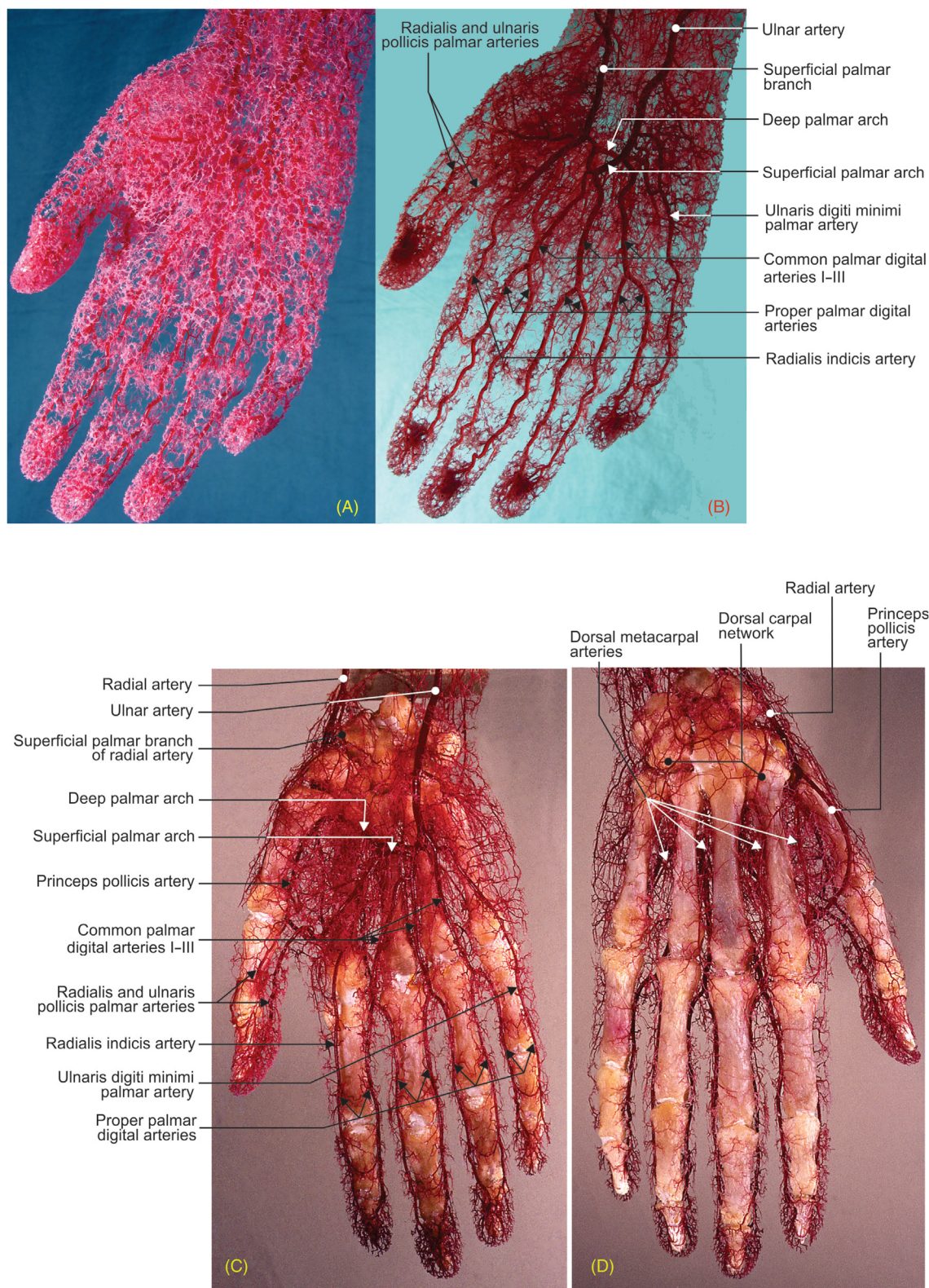


FIGURE 1.24 Arterial networks (corrosion casts) of right hand. (A) Superficial vessels, (B) major vessels, (C) palmar side, and (D) dorsal side.

Chapter 2

Lower Limb and Vascularization

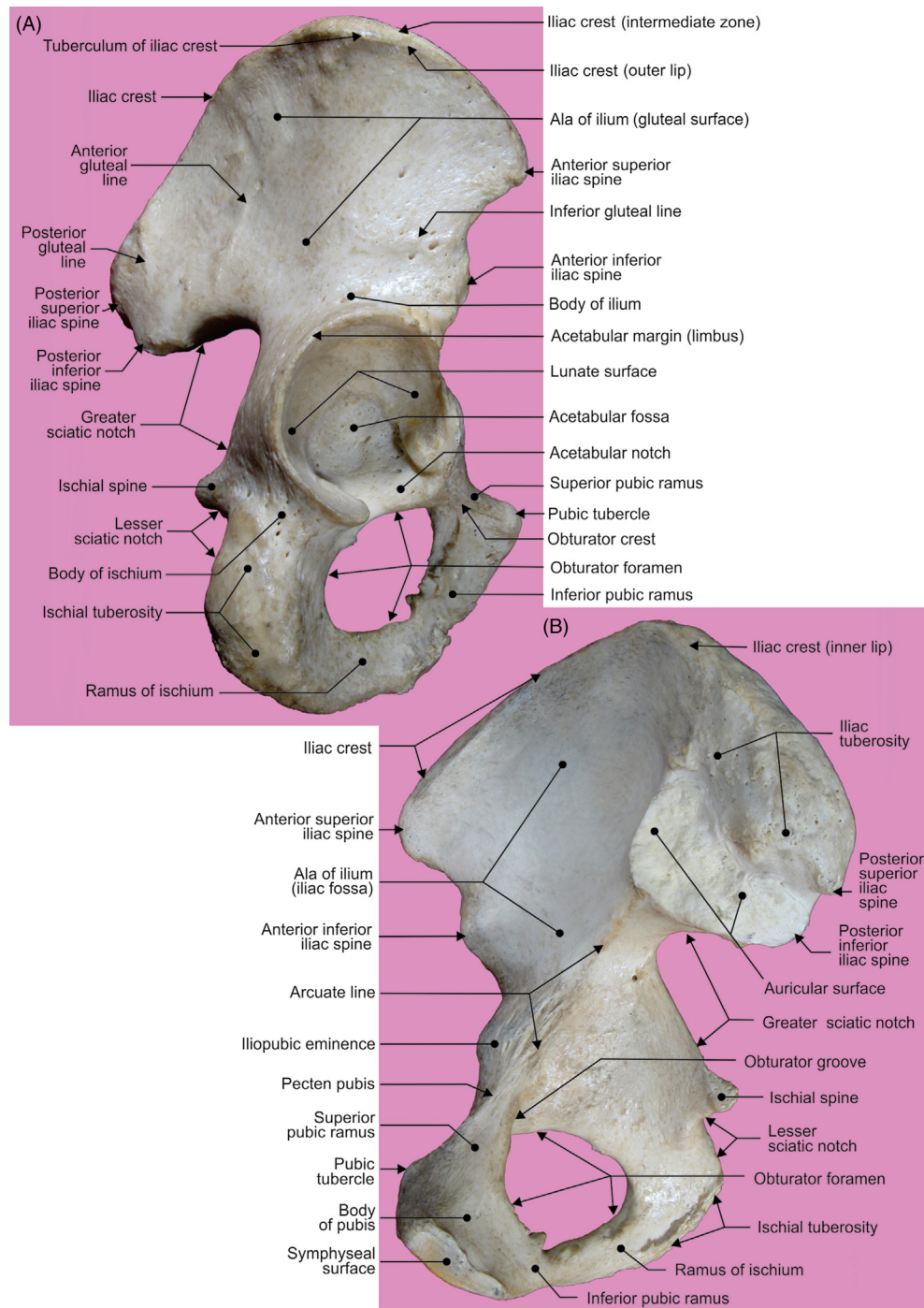


FIGURE 2.1 The hip bone. (A) Lateral and (B) medial views.

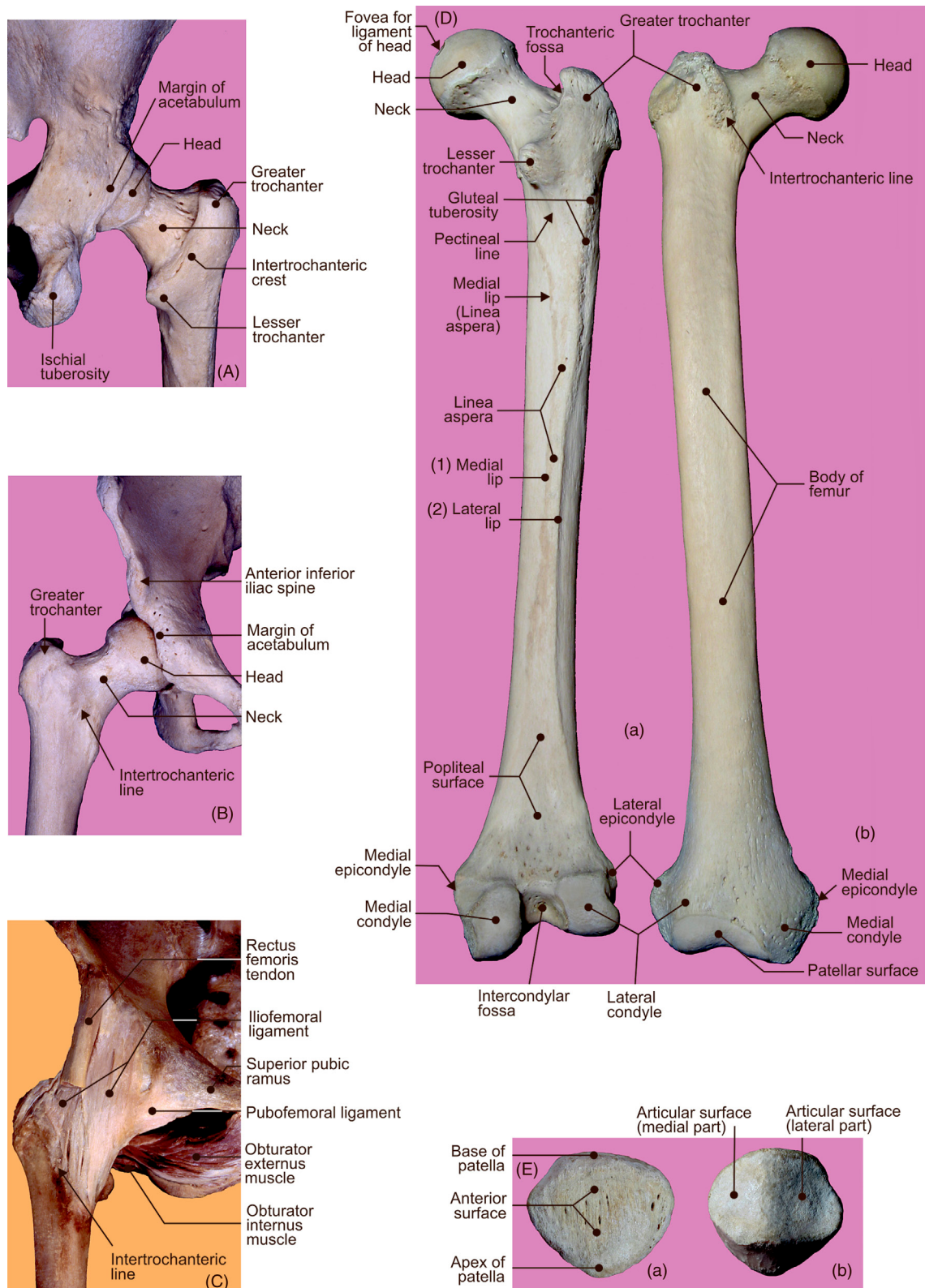


FIGURE 2.2 The hip joint: (A) posterior and anterior (B) views of the bones; (C) anterior view of the ligaments. (D) Right femur: (a) posterior and (b) anterior views. (E) Patella: (a) anterior and (b) posterior views.

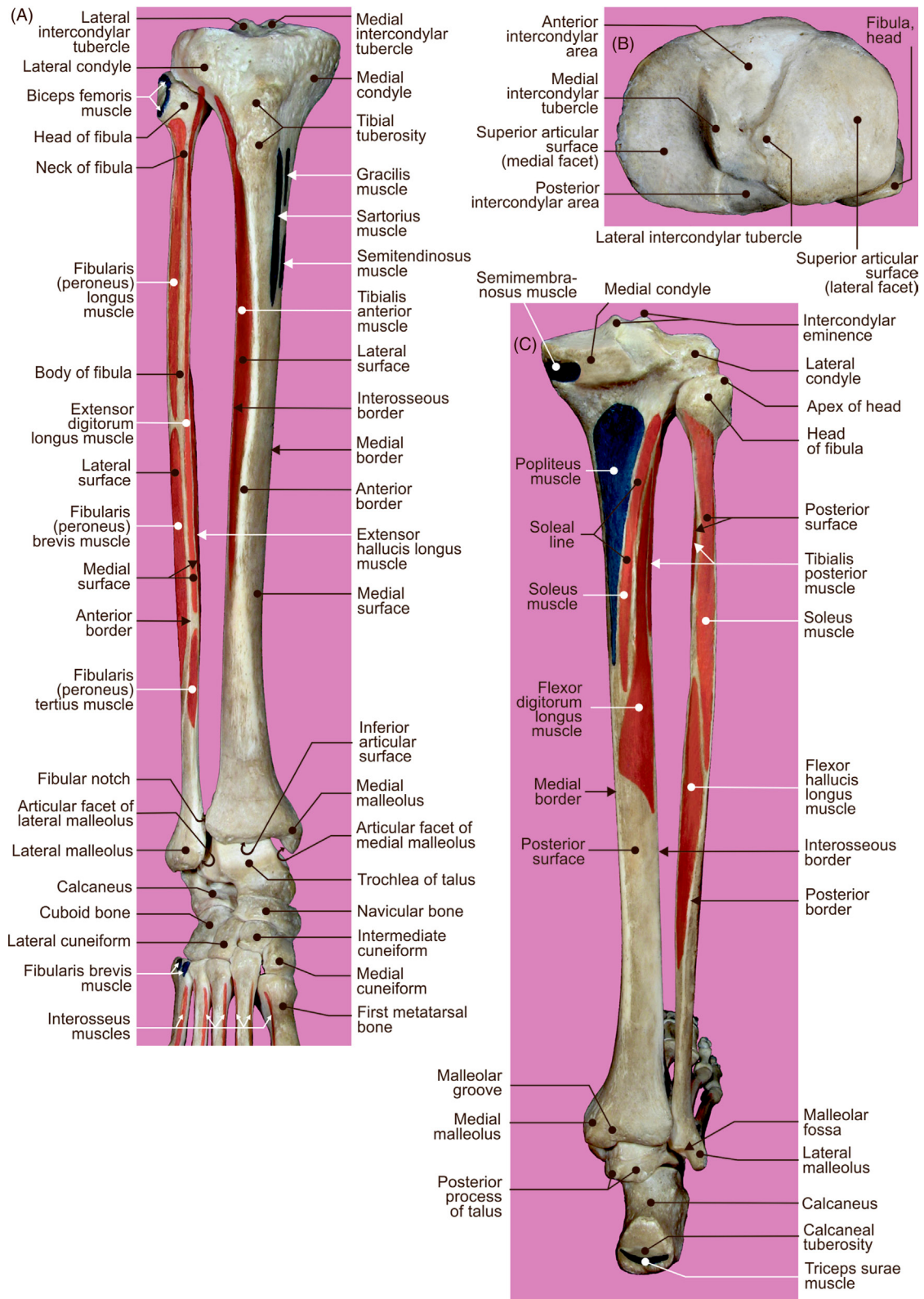


FIGURE 2.3 Right tibia and fibula. (A) Anterior, (B) superior, and (C) posterior views.

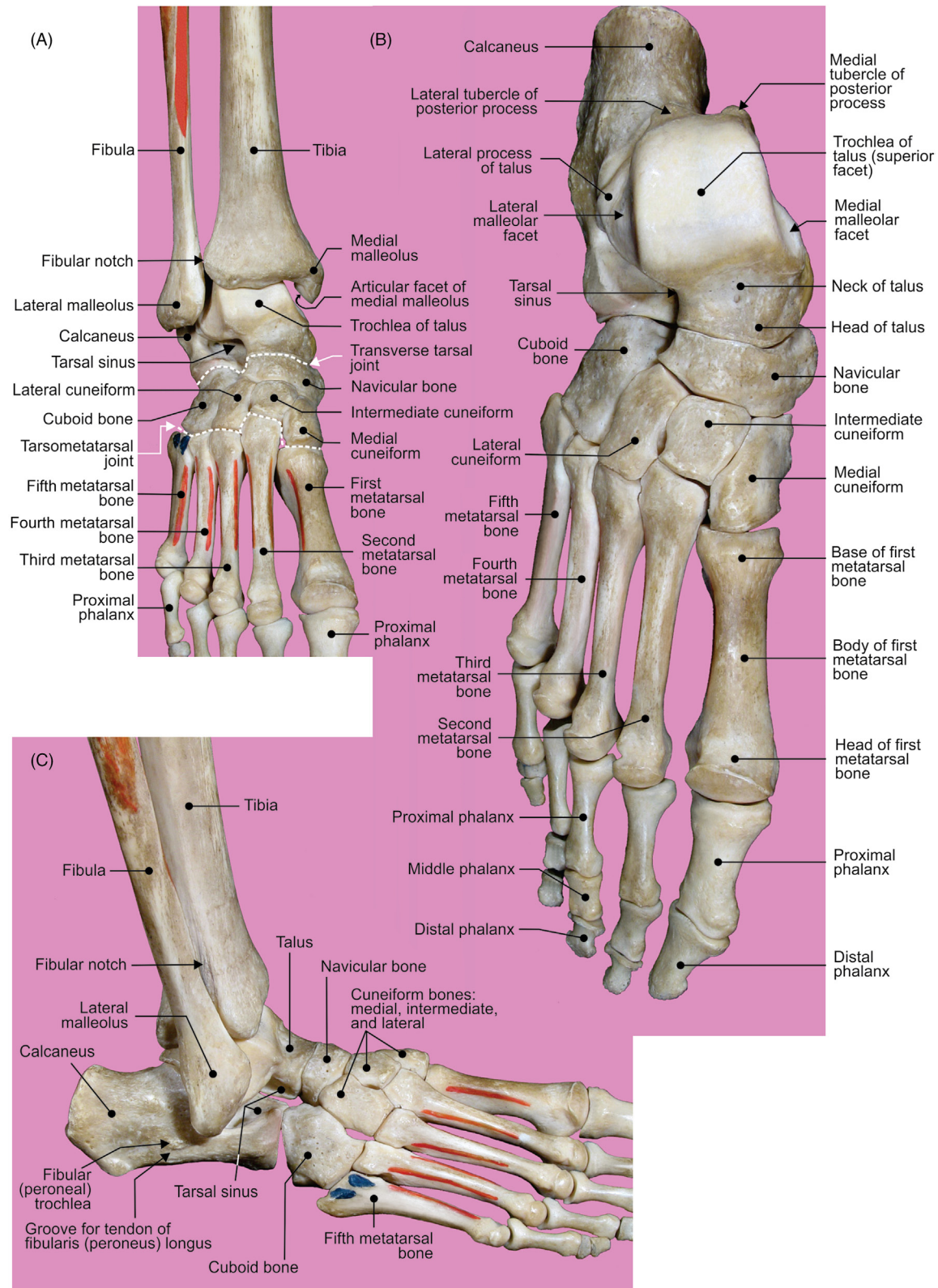


FIGURE 2.4 Skeleton of the foot. (A–C) Different views of the dorsal aspect.

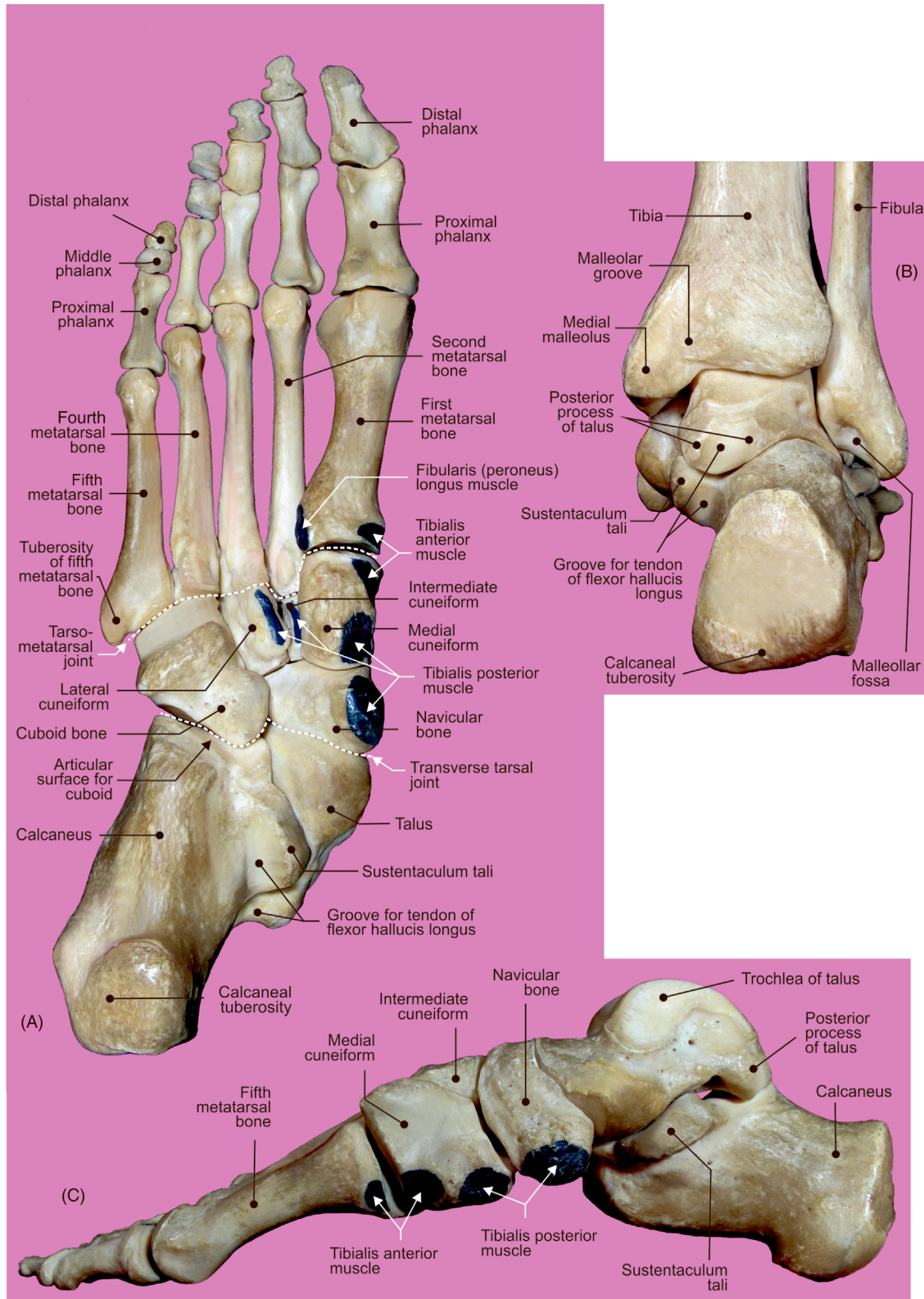


FIGURE 2.5 Skeleton of the right foot. (A) Inferior, (B) posterior, and (C) medial aspects.

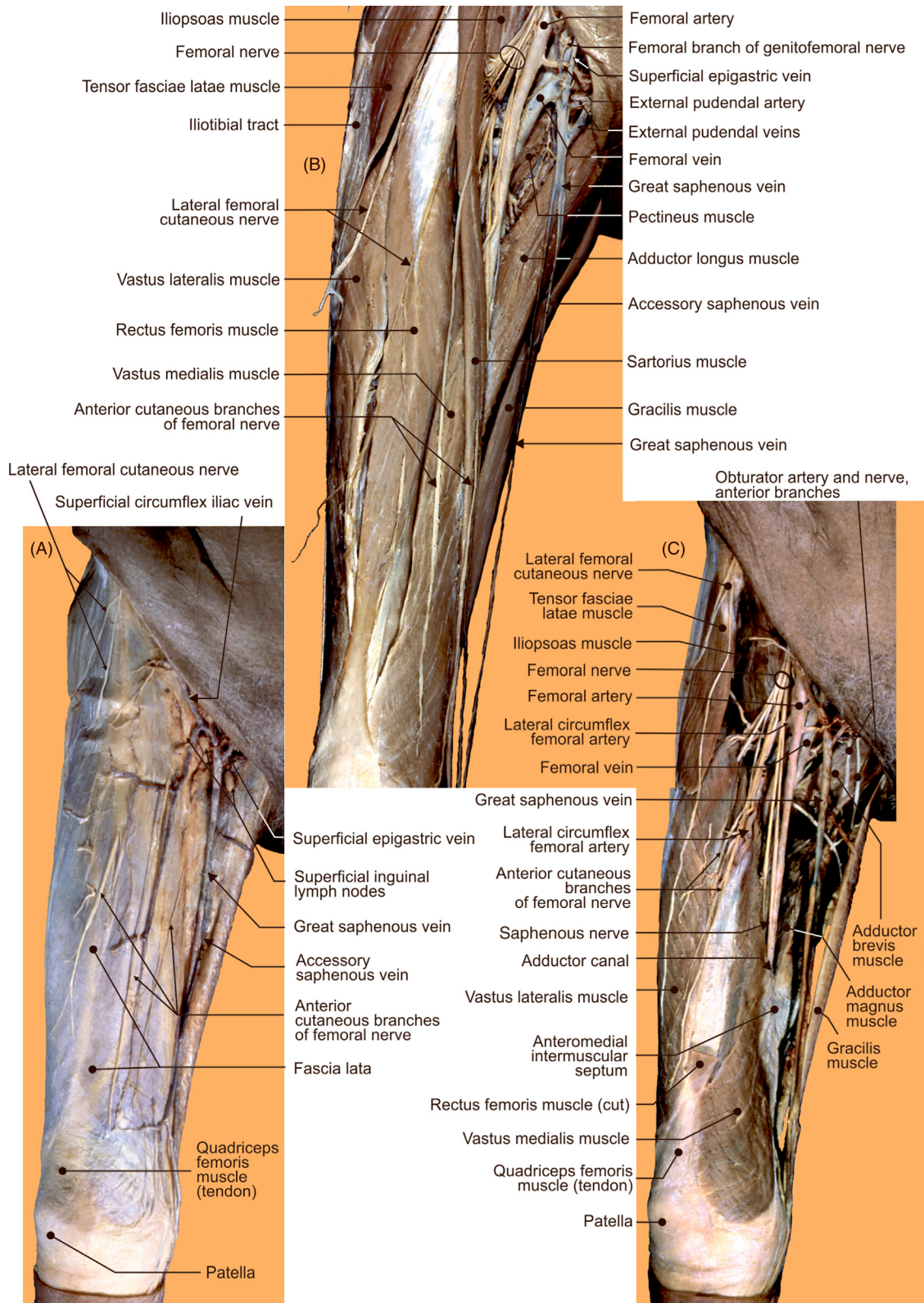


FIGURE 2.6 Frontal view of the anterior femoral region. (A–C) Different layers offering structural details.

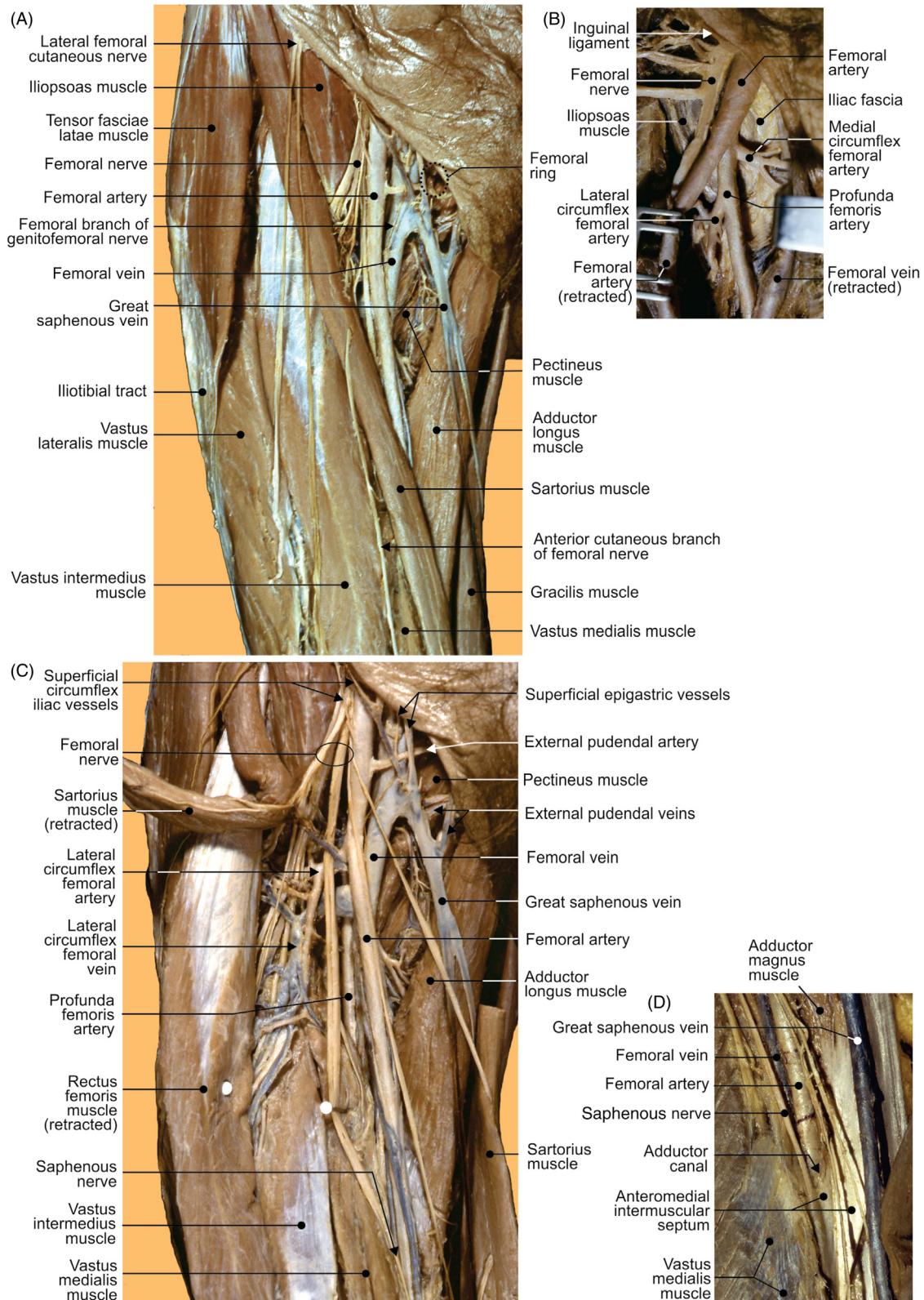


FIGURE 2.7 Frontal view of the right anterior femoral region. (A,C) Frontal view of the right anterior femoral region, (B) femoral artery, and (D) detail of the lower medial femoral subregion.

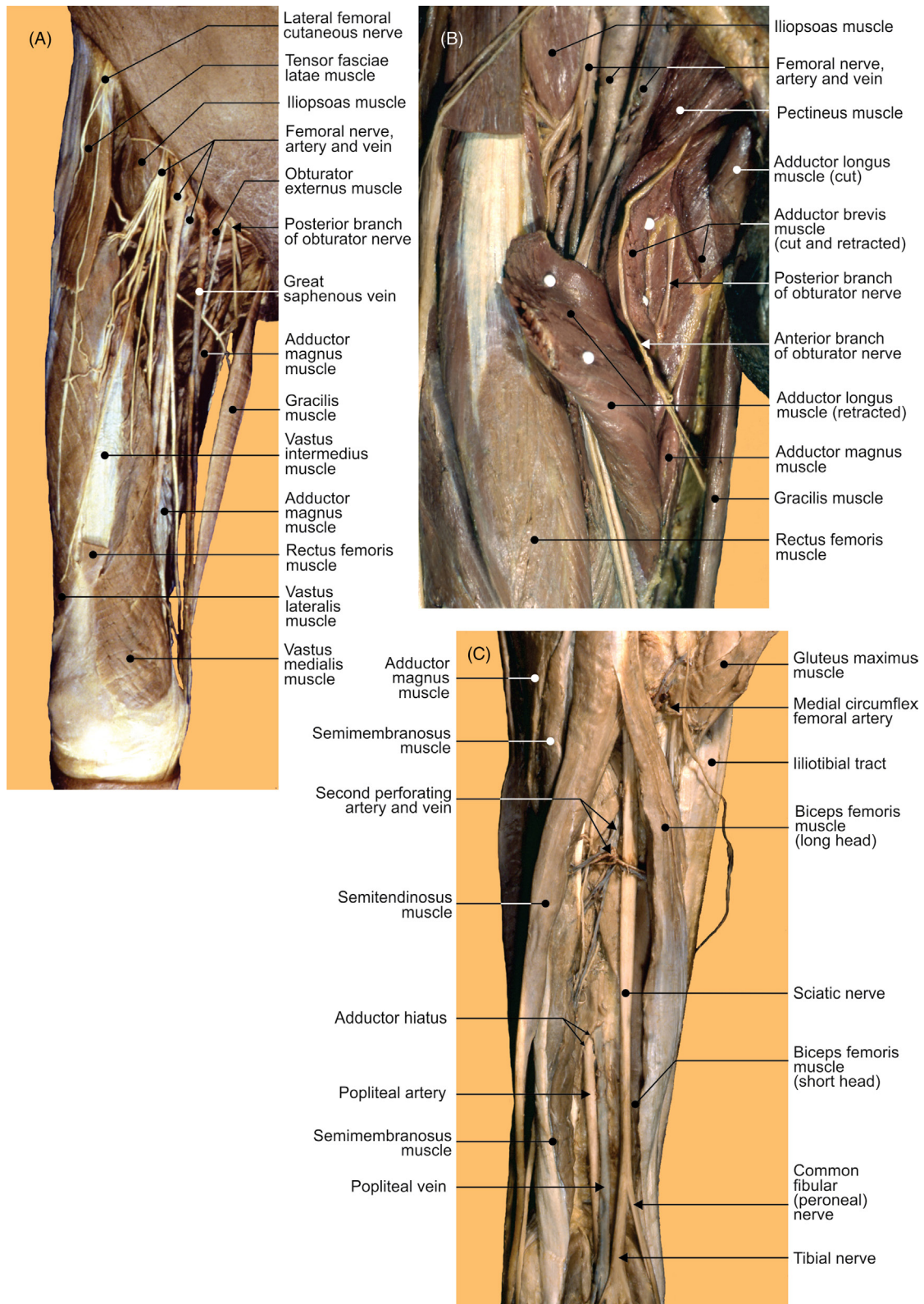


FIGURE 2.8 The right lower limb. Frontal views of the (A–B) anterior femoral regions and (C) posterior femoral region.

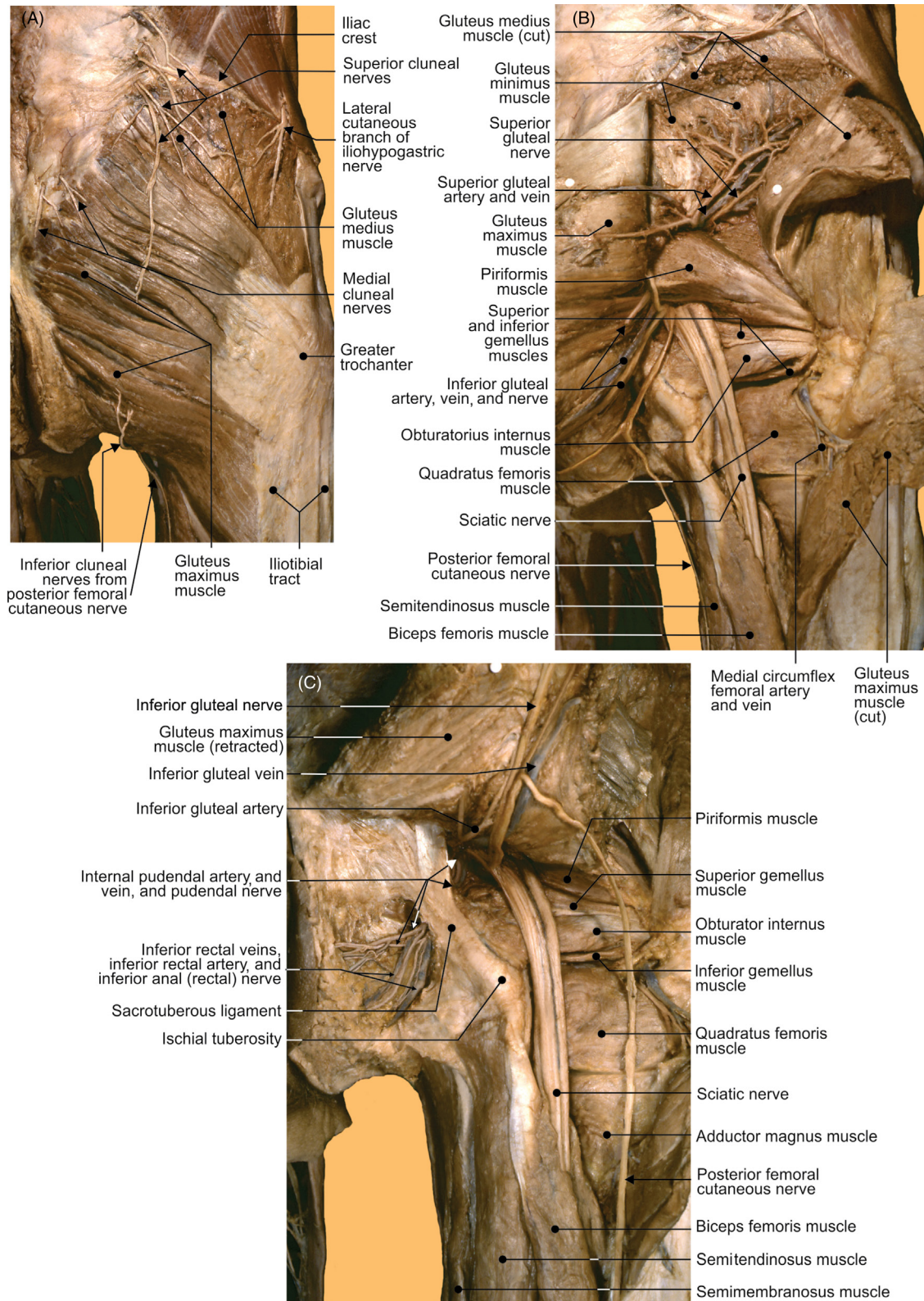


FIGURE 2.9 The right gluteal region. (A–C) Different views offering structural details of the superficial and deeper layers.

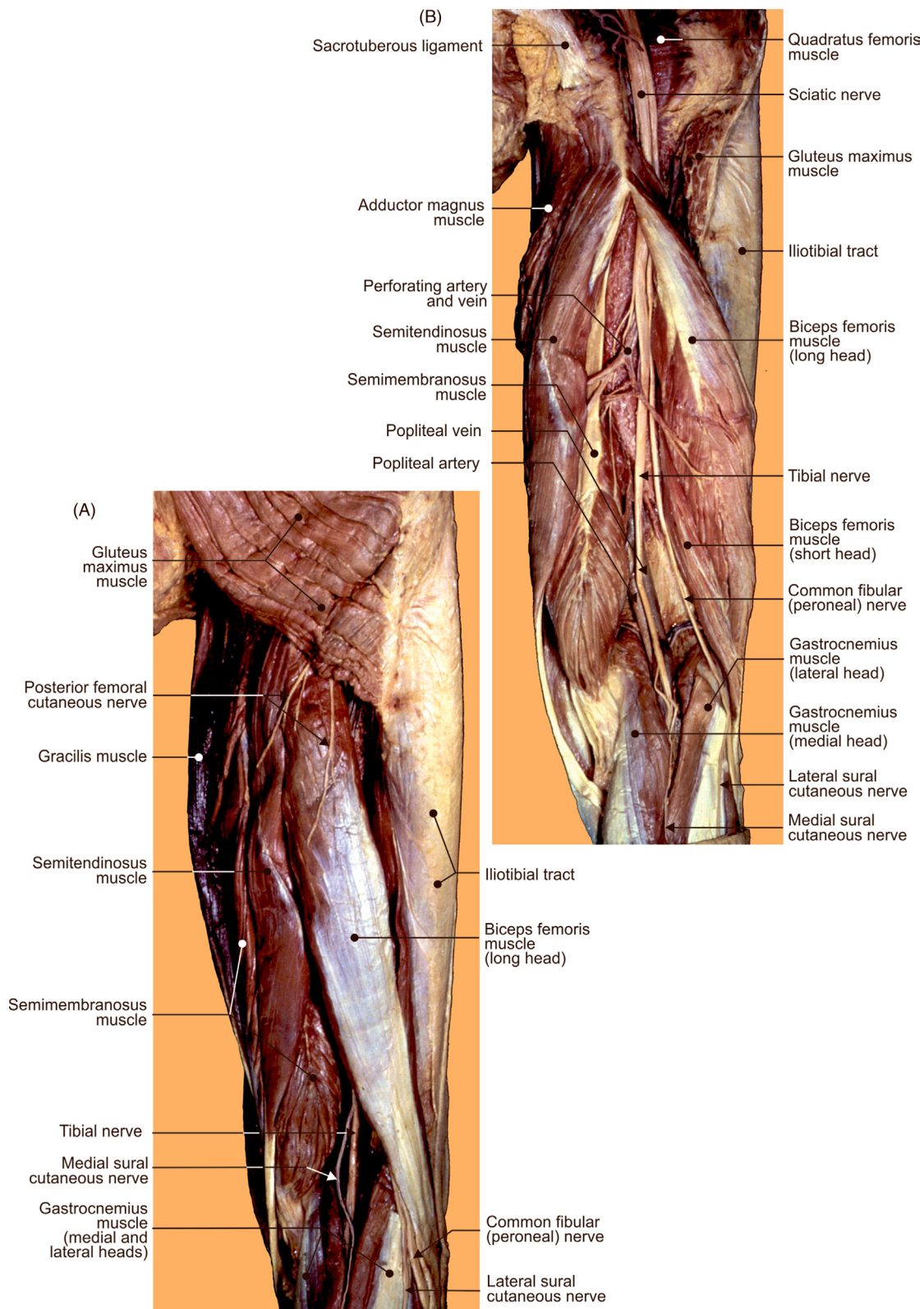


FIGURE 2.10 The right posterior femoral regions and popliteal fossa. (A) Superficial and (B) deep layers.

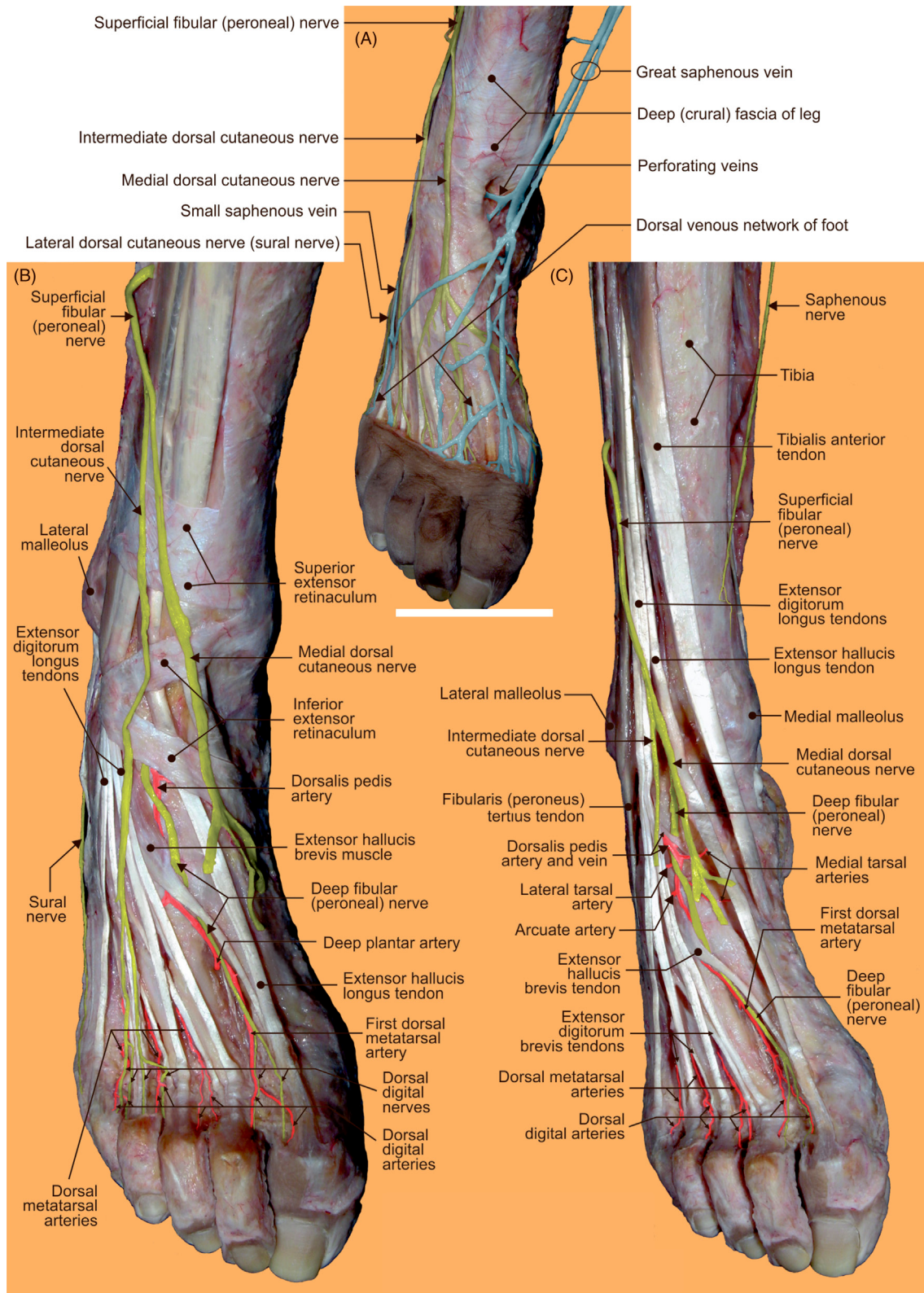


FIGURE 2.12 Nerves, blood vessels, and tendons of the right foot. (A) Superficial and (B–C) deep layers.

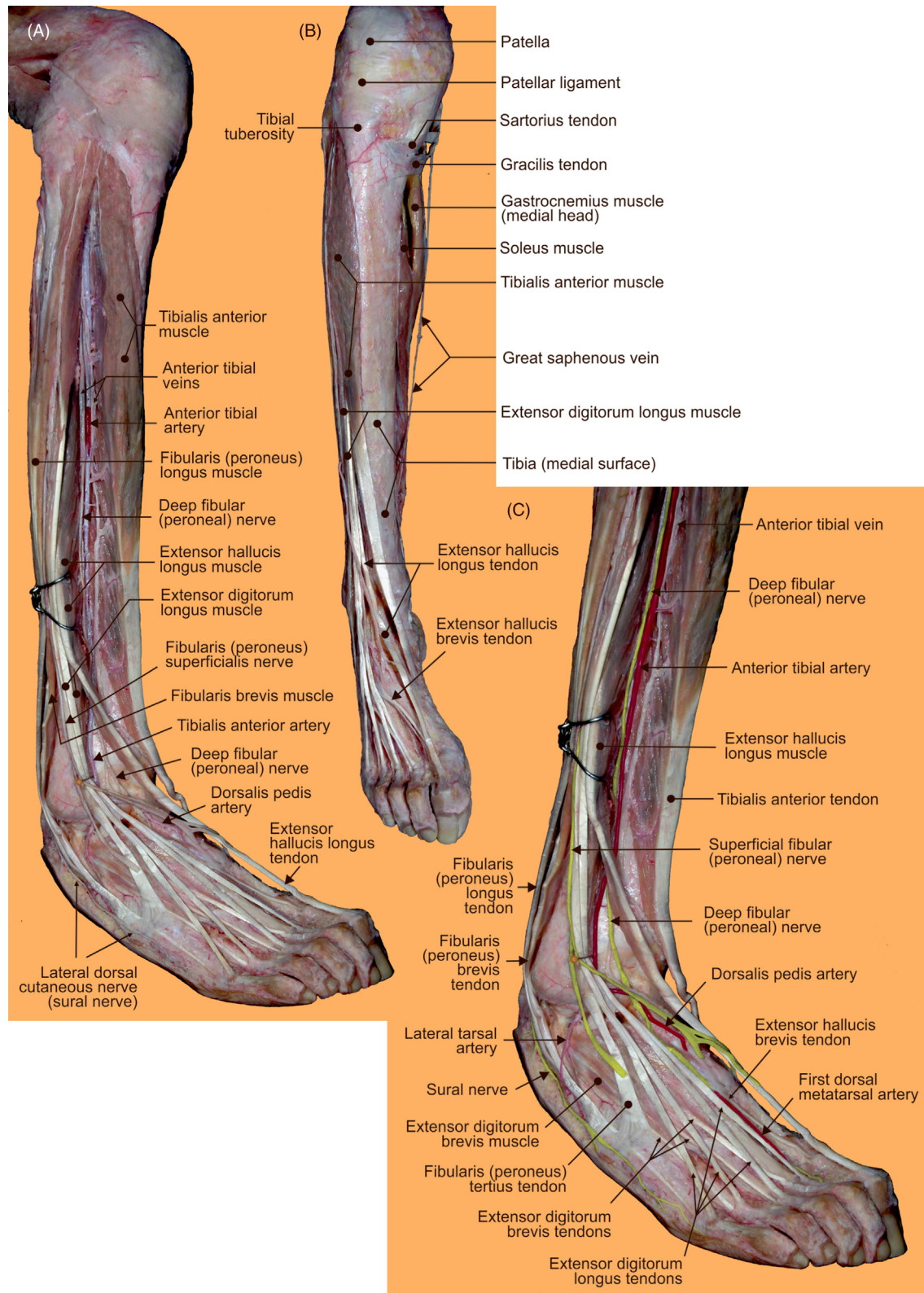


FIGURE 2.13 The right lower limb. (A–C) Different views offering structural details of the anterior region of the leg and the dorsum of the foot.

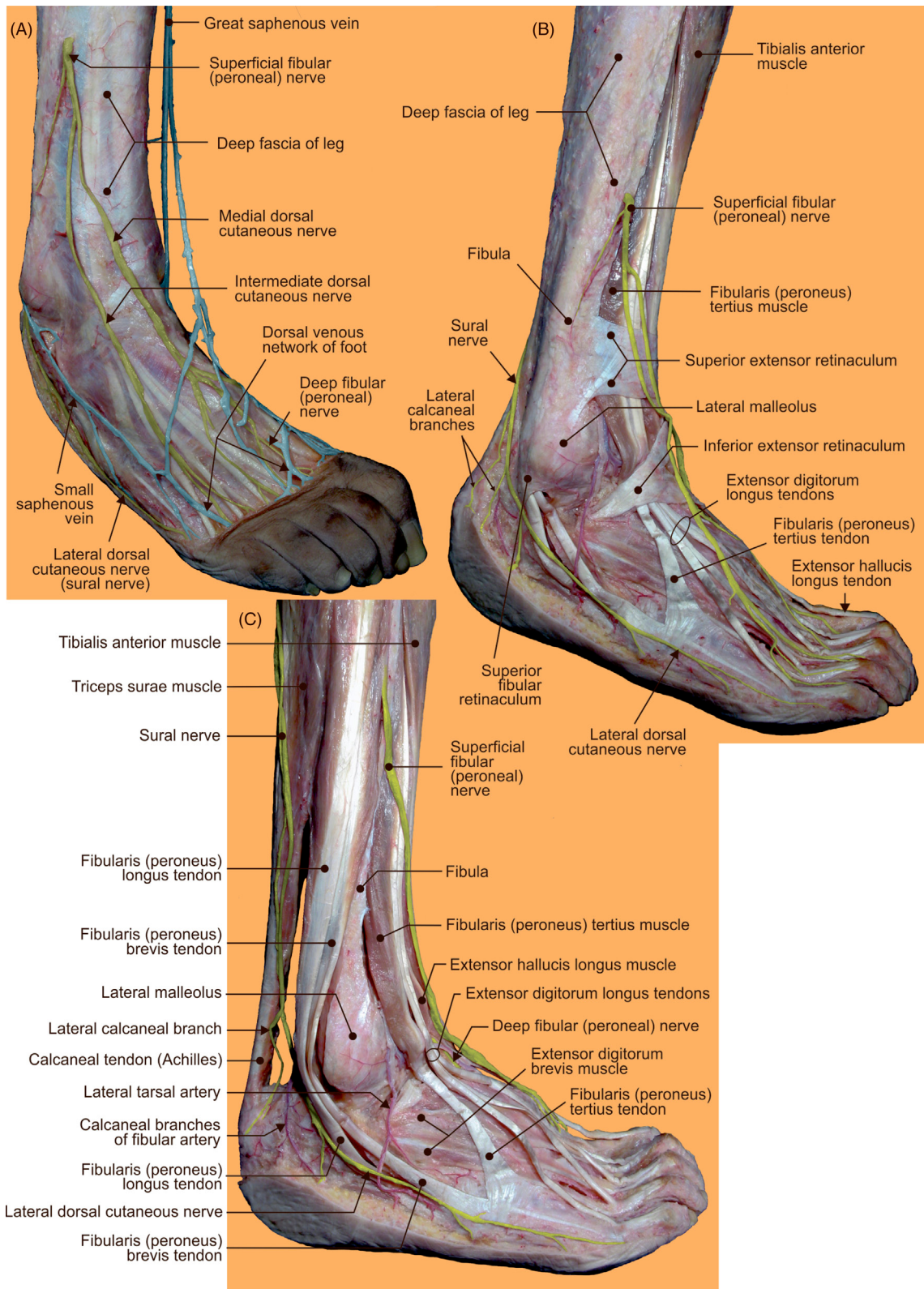


FIGURE 2.14 The right foot. (A–C) Different layers offering the lateral aspect of nerves, blood vessels, and muscles on the dorsal surface.

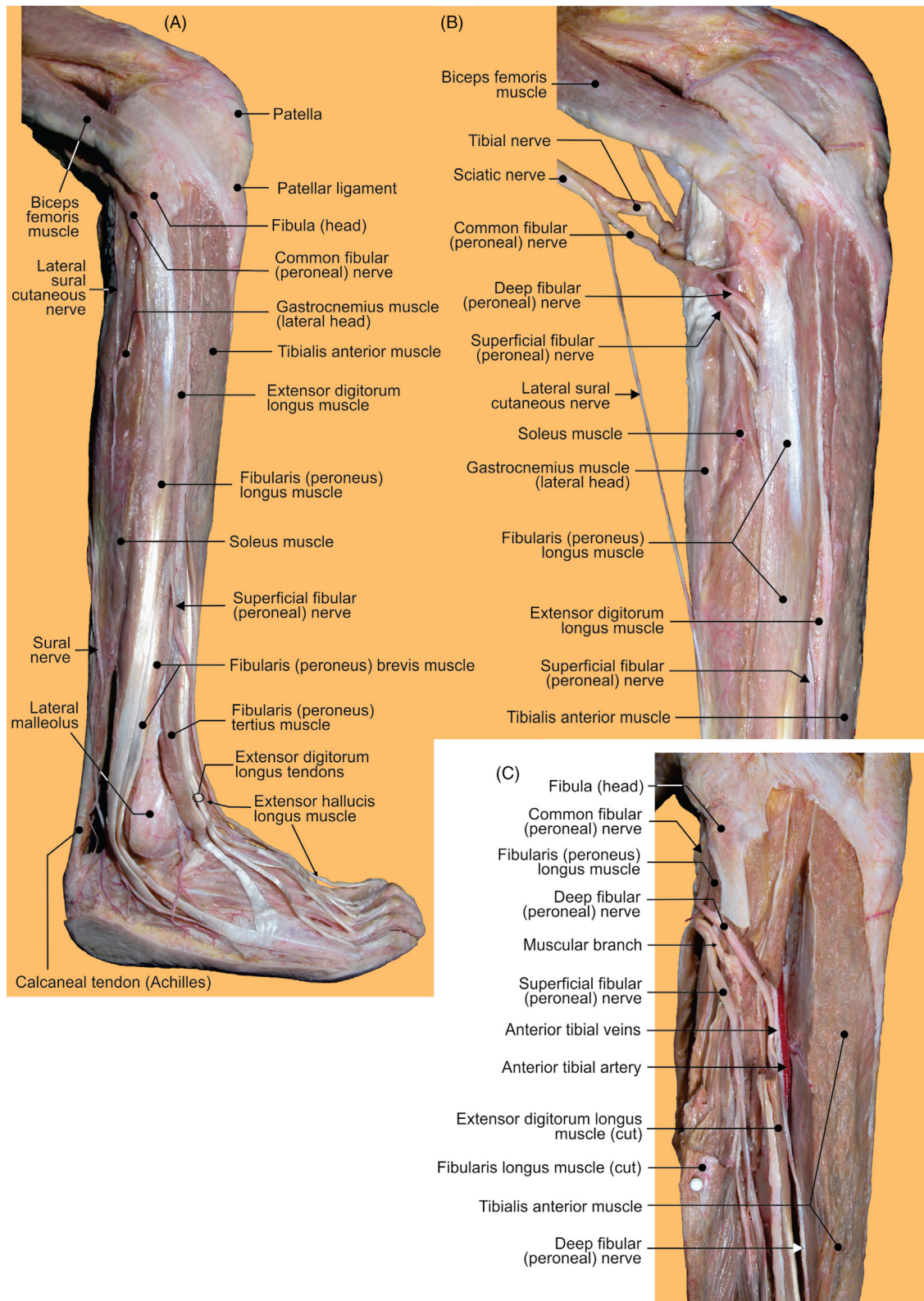


FIGURE 2.15 The right limb. (A) Anterior region of leg with dorsum of foot and (B) without foot. (C) Removed upper part of the fibularis (peroneus) longus muscle.

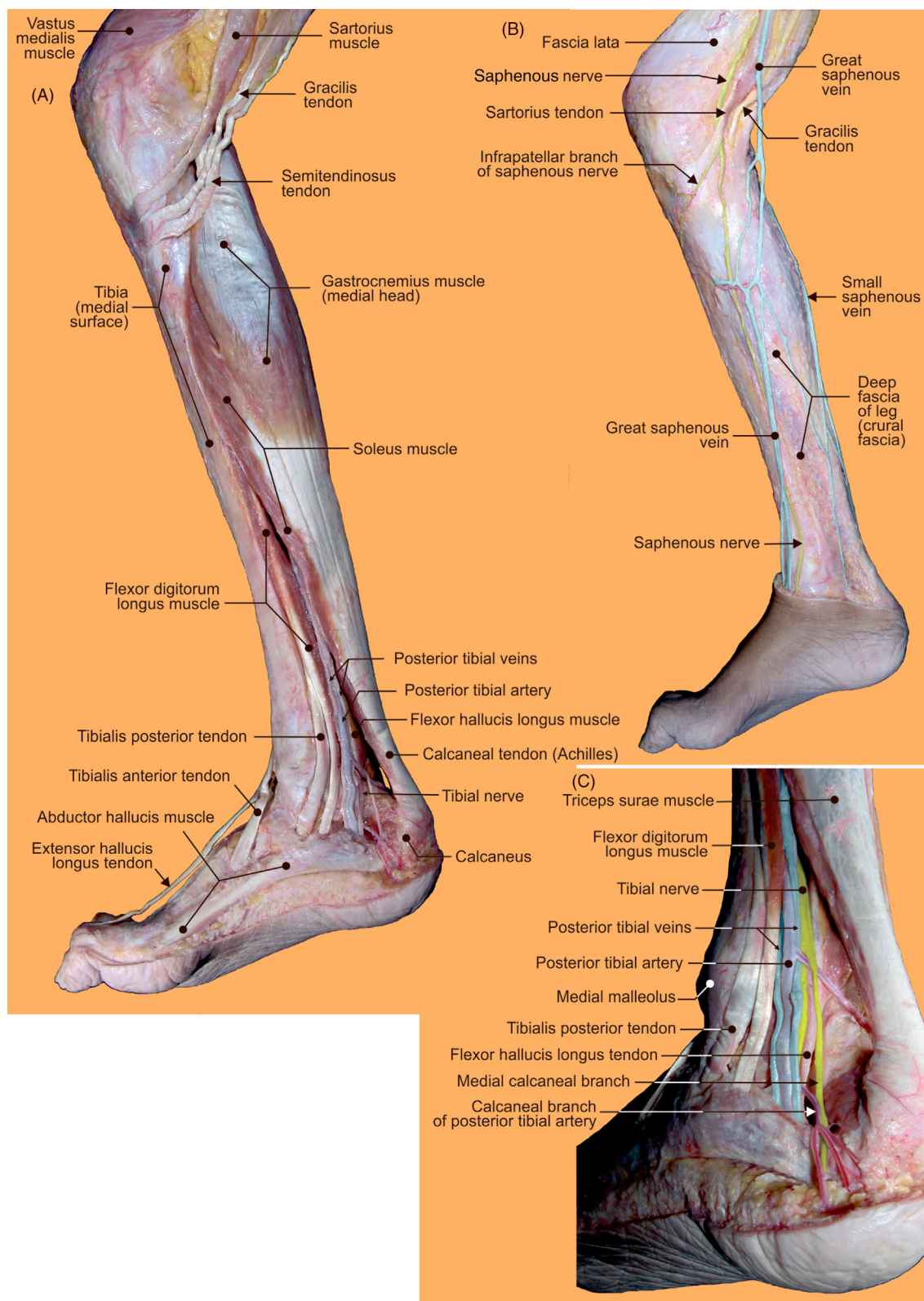


FIGURE 2.16 The medial aspects of the right leg and foot. (A) Deep and (B) superficial dissected layers. (C) The medial retromalleolar region.

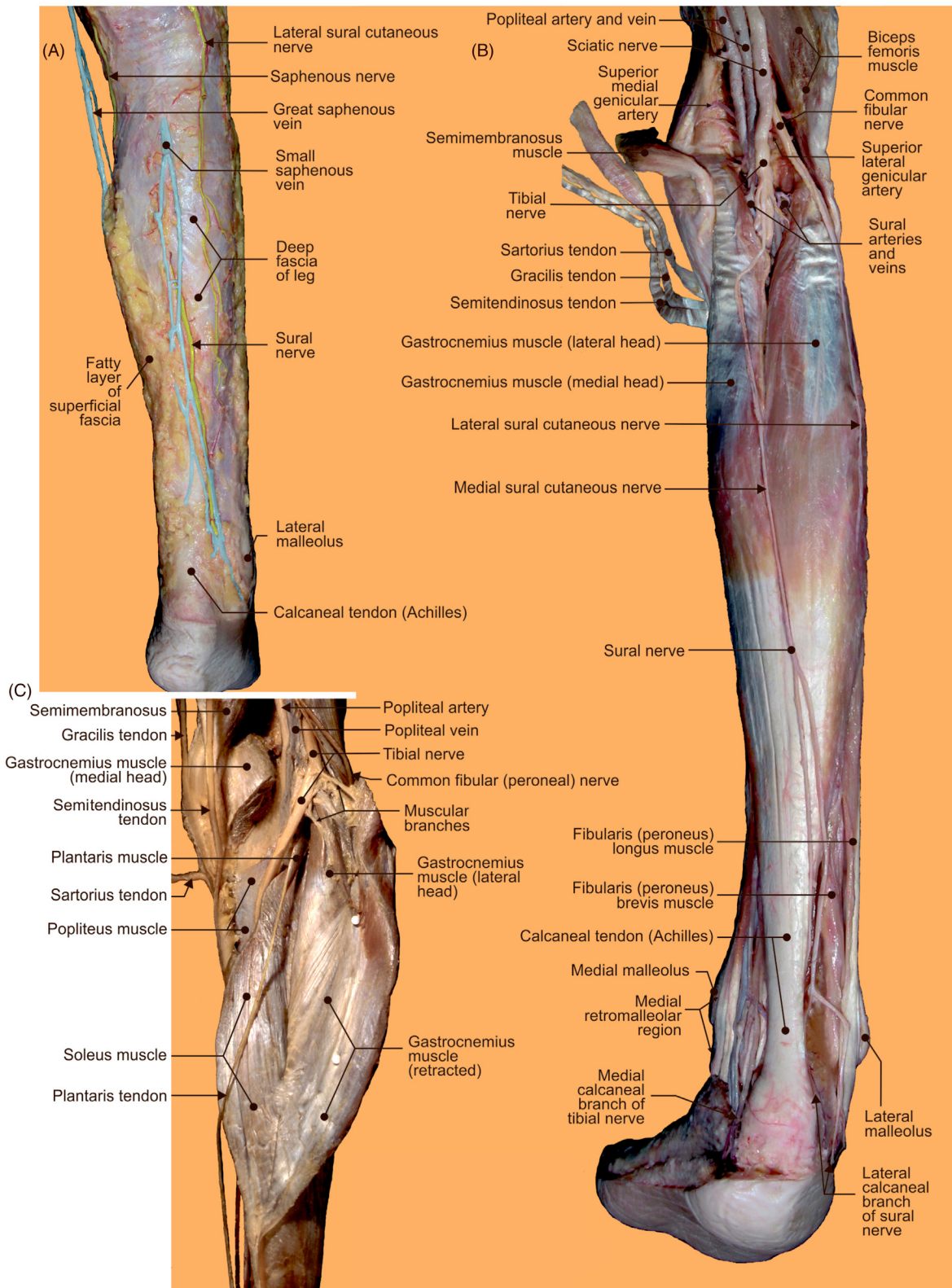


FIGURE 2.17 The popliteal and posterior crural regions of right limb. (A–B) Superficial and (C) deep layers.

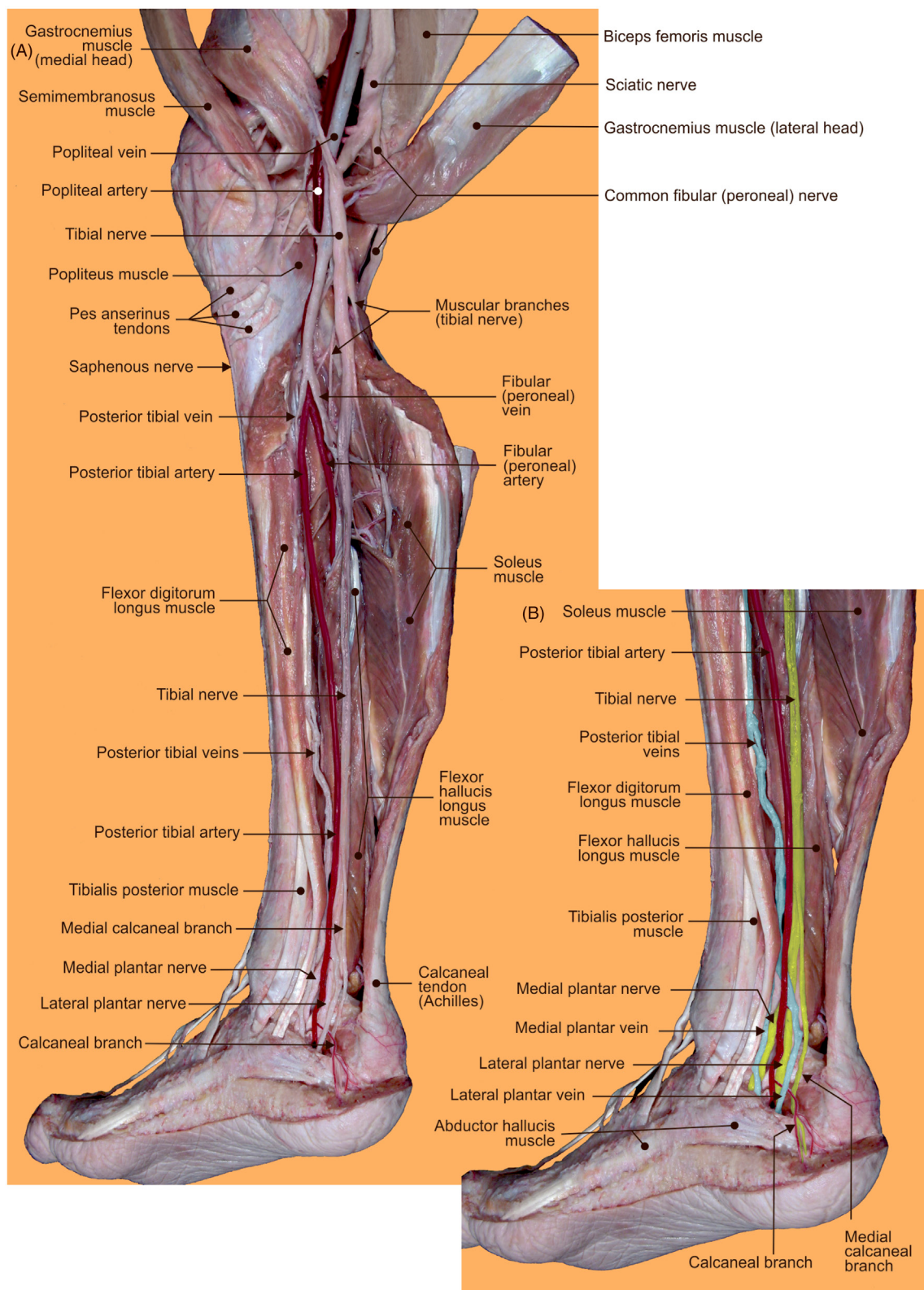


FIGURE 2.18 (A–B) Structural details of the deep layers of the popliteal, posterior crural, and medial retromalleolar regions.

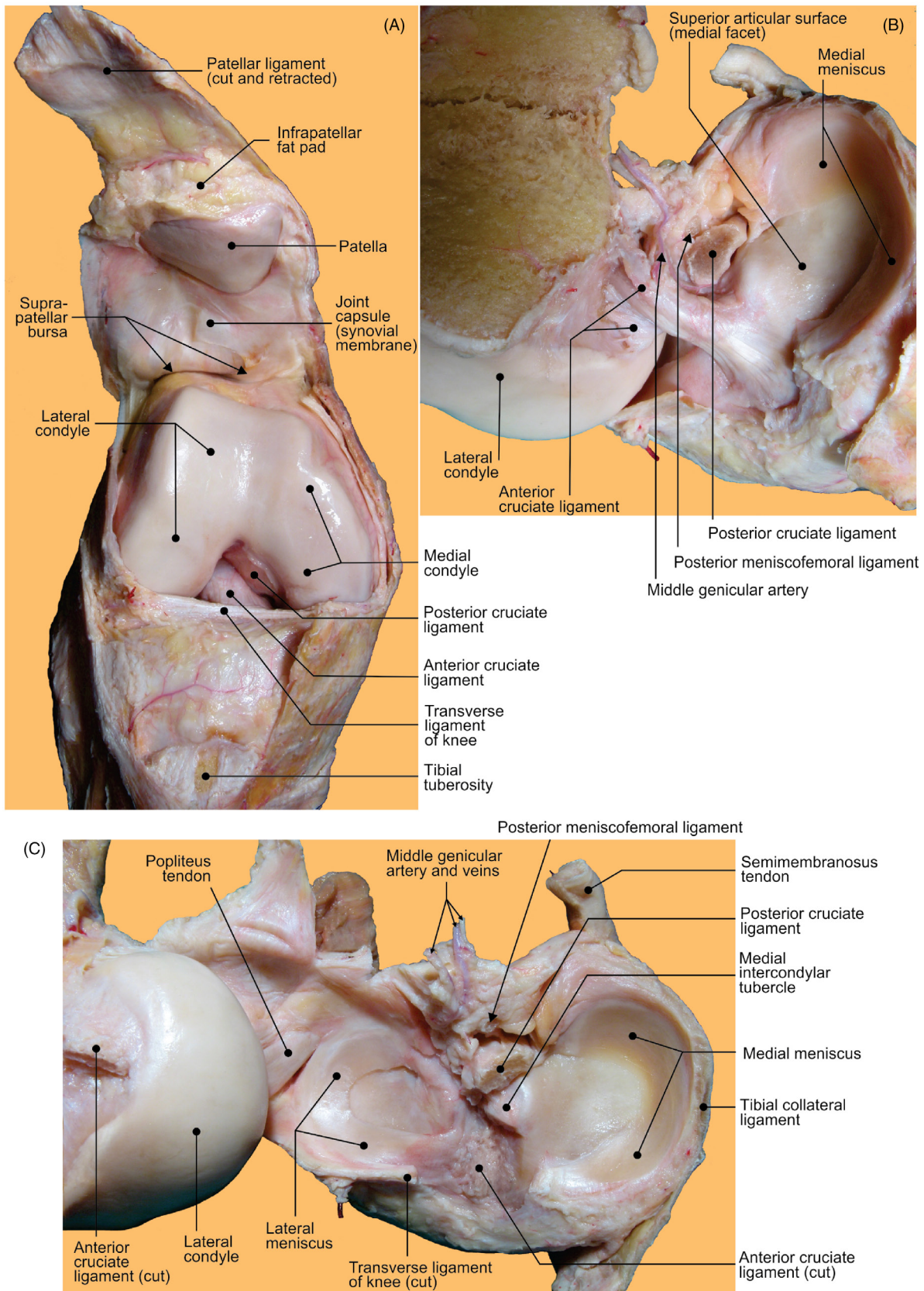


FIGURE 2.19 The right knee joint. (A) Anterior view of open joint. (B) Removed medial condyle and transected posterior cruciate ligament. (C) Superior view of the tibial articular surface after transection of both cruciate ligaments.

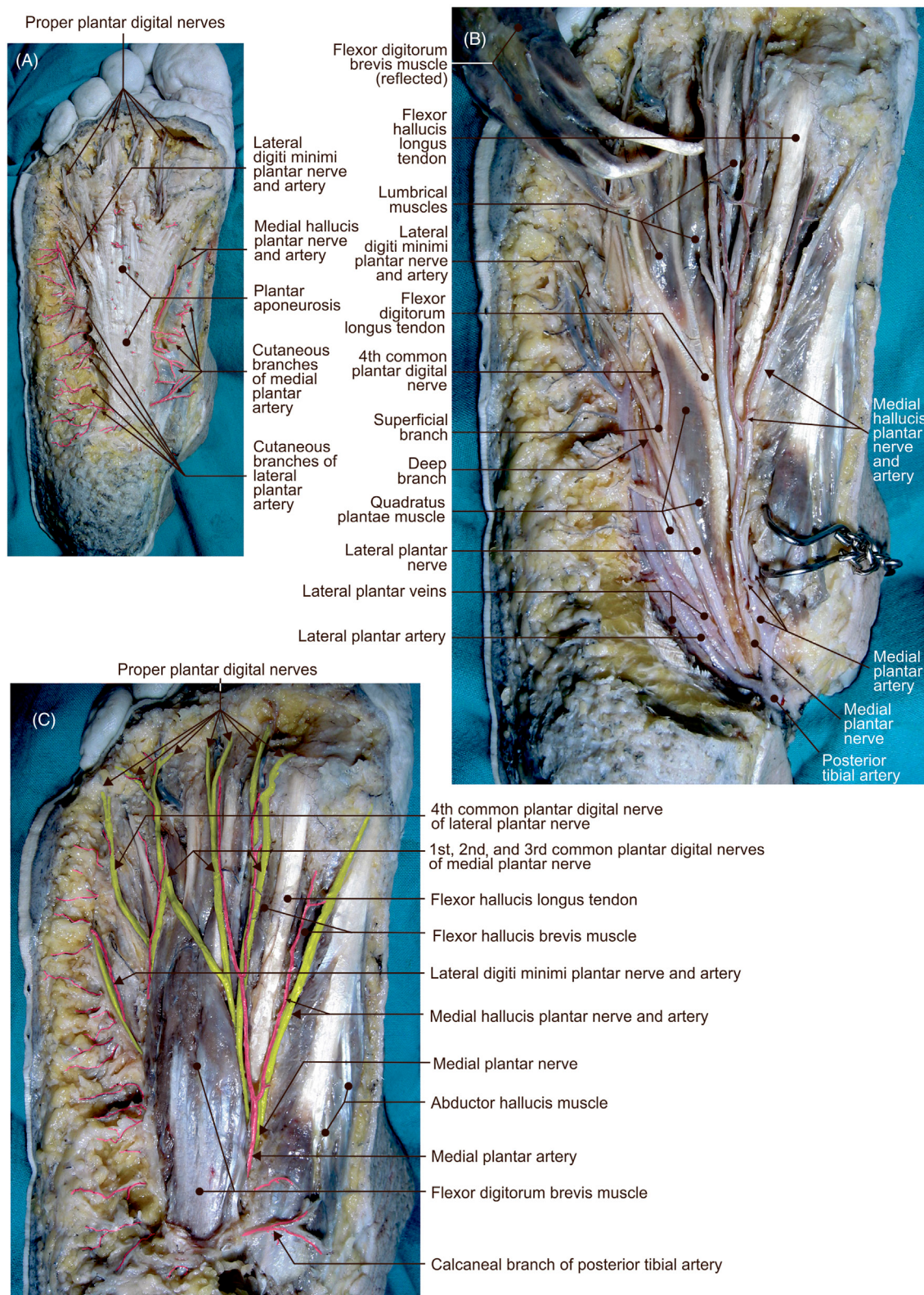


FIGURE 2.20 Plantar aspect of the right foot. Structures in the (A) superficial and (B–C) middle layers.

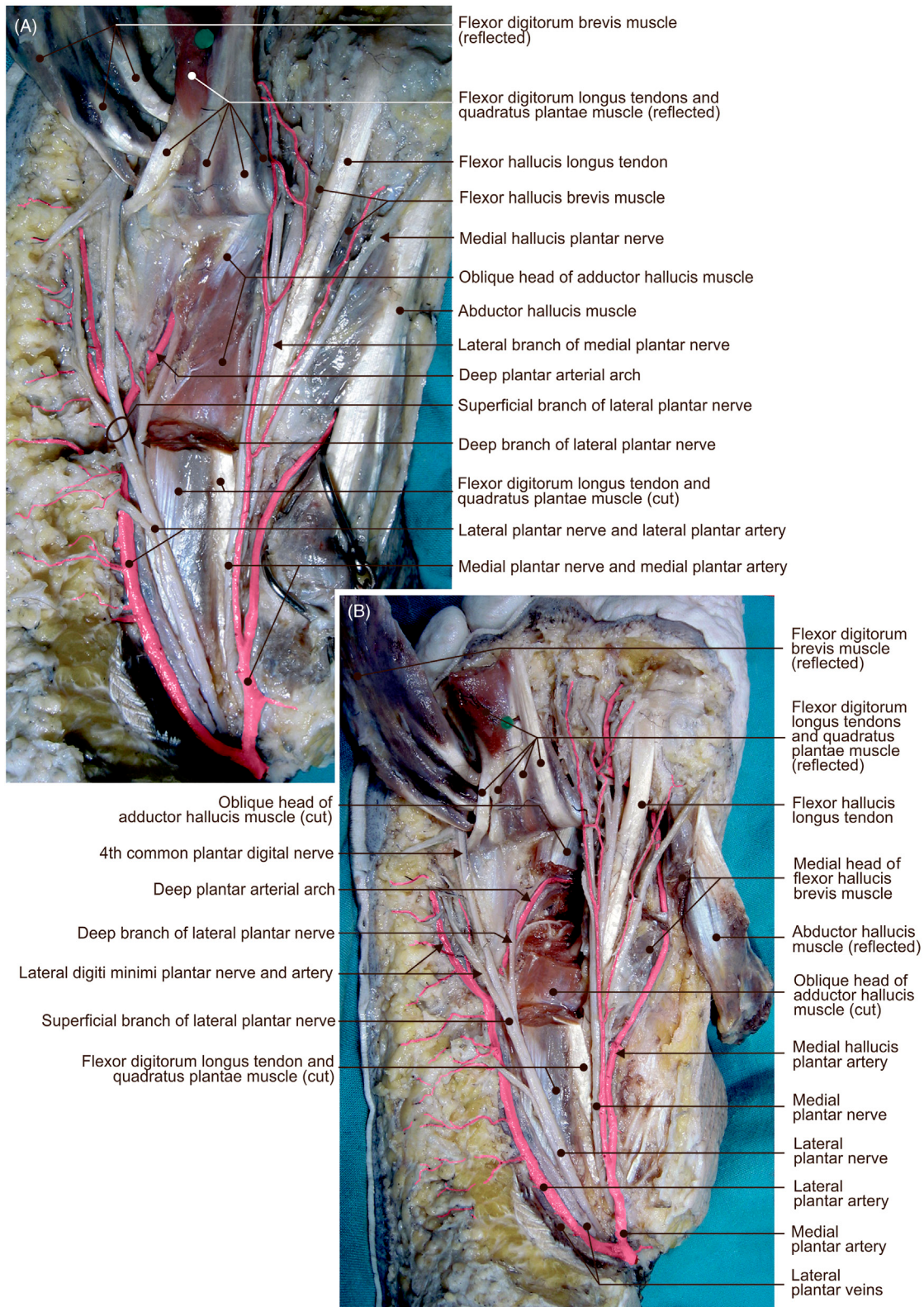


FIGURE 2.21 Plantar aspect of the right foot. (A–B) Different views offering structural details in the deep layer.

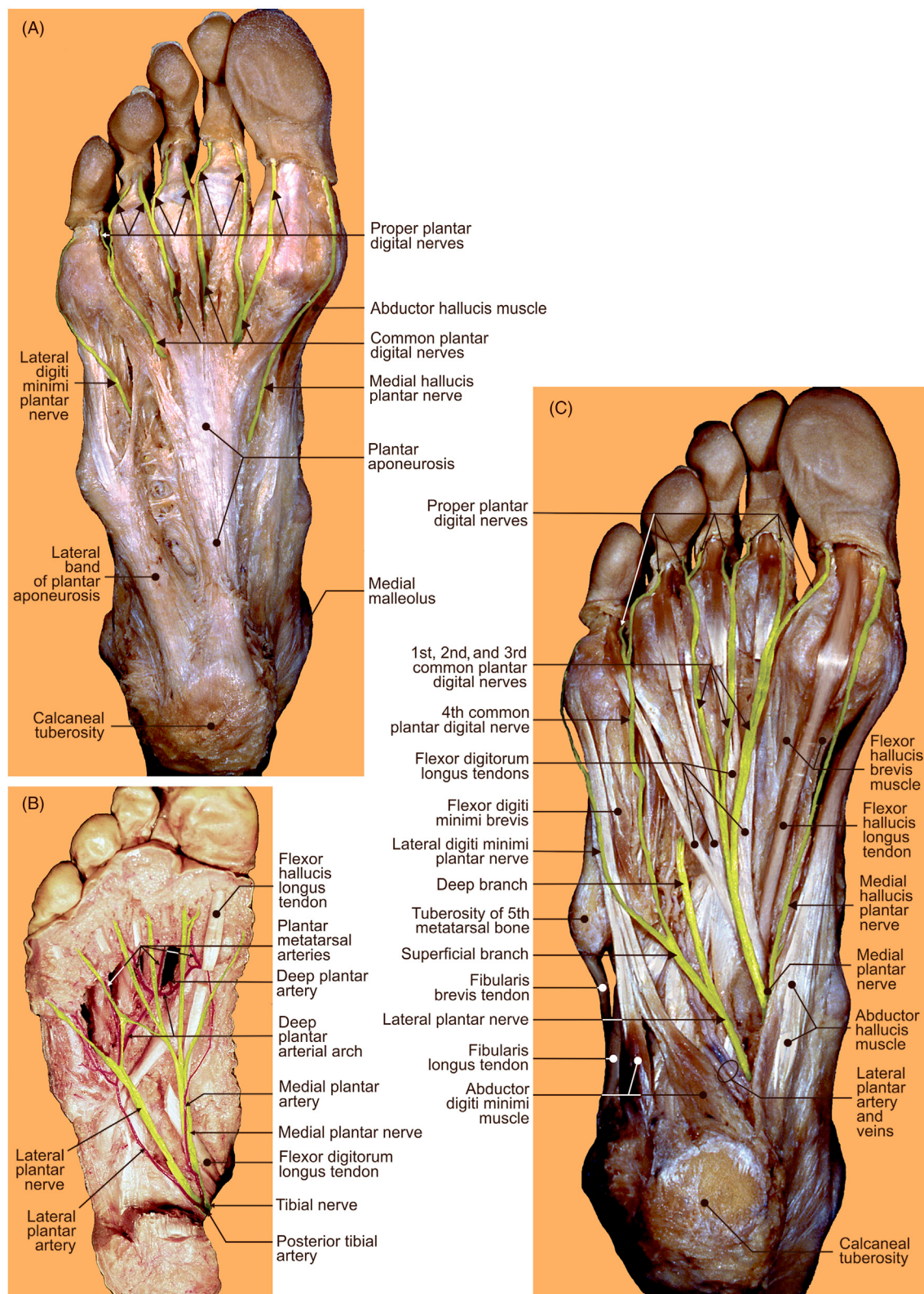


FIGURE 2.22 Plantar region of the right foot. (A–C) Different views displaying arteries, nerves, and tendons.

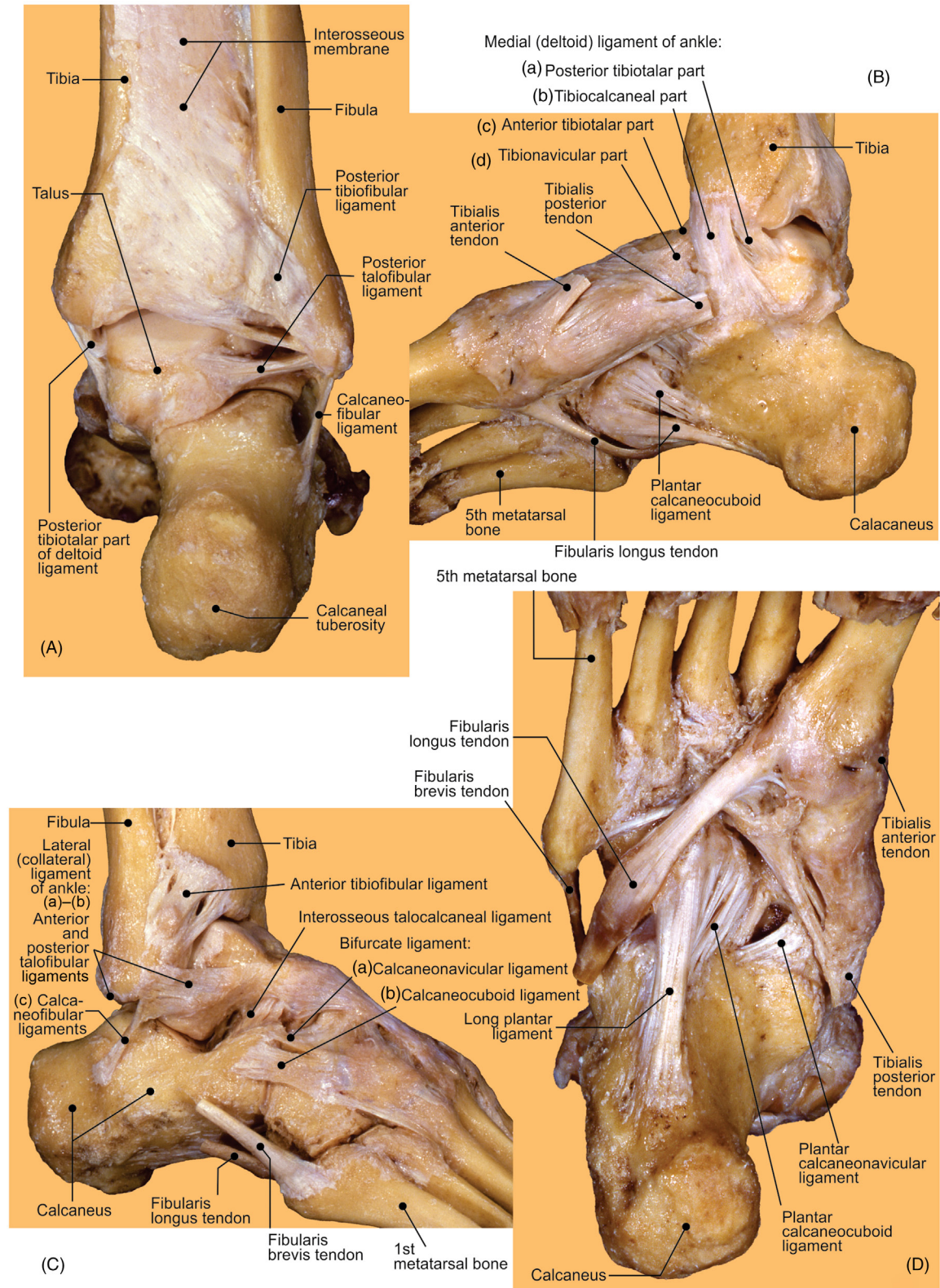


FIGURE 2.23 Ligaments and tendons of the right foot. (A) Posterior, (B) medial, (C) lateral, and (D) inferior views.

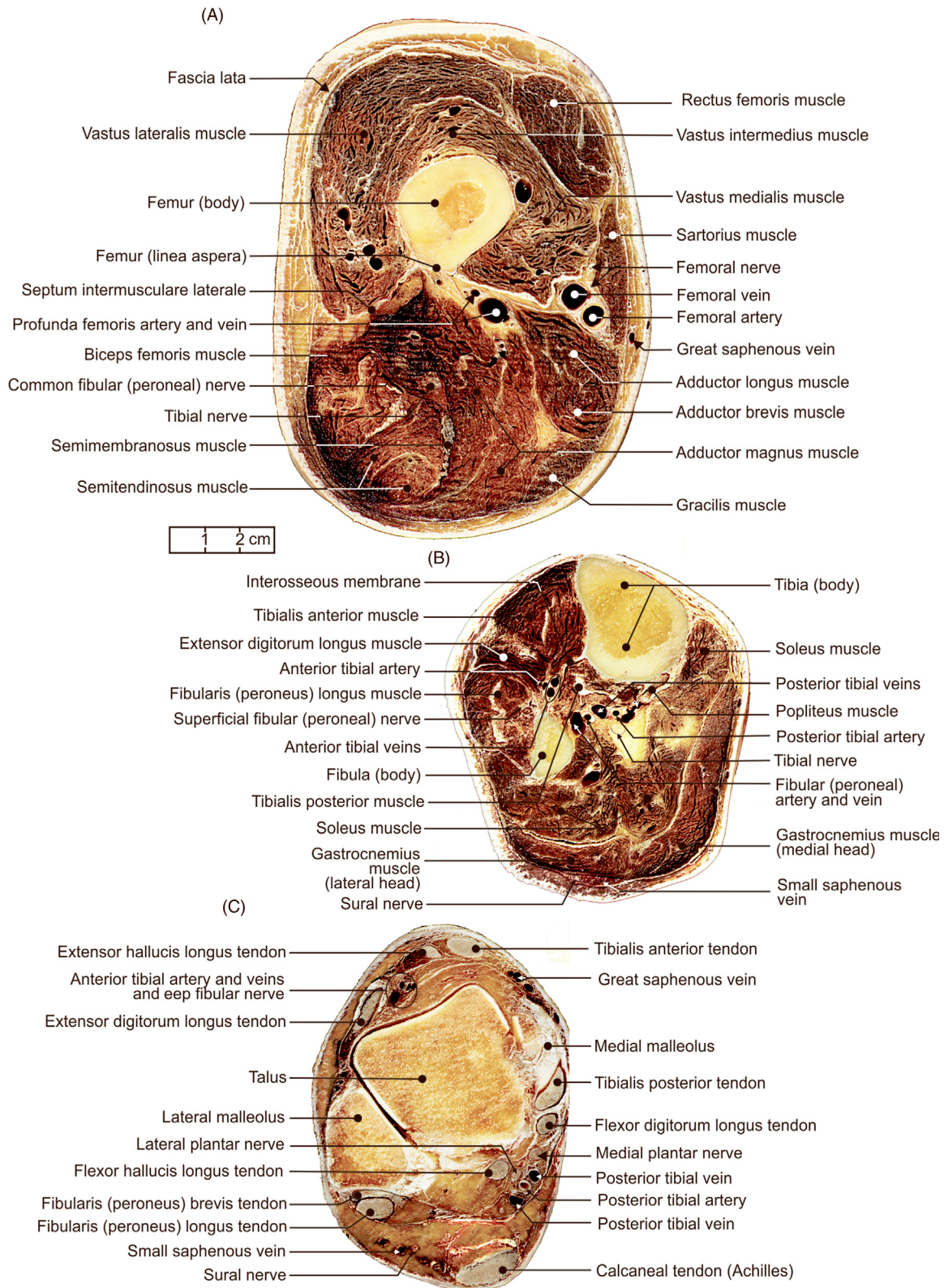


FIGURE 2.24 The right limb. Cross-sectional views of the (A) thigh, (B) leg, and (C) proximal segment of foot.

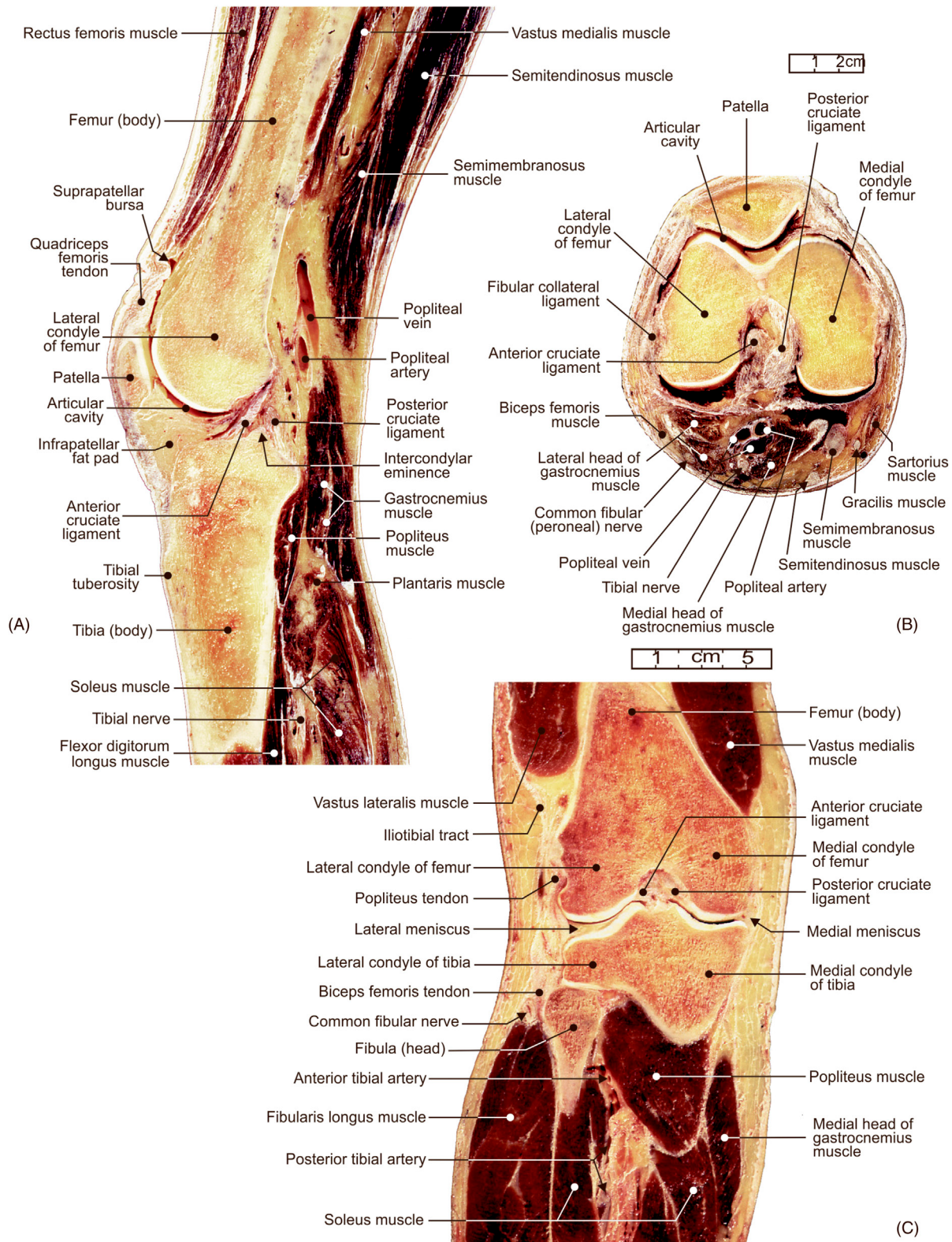


FIGURE 2.25 The right limb knee region. (A) Sagittal, (B) transverse, and (C) coronal sections.

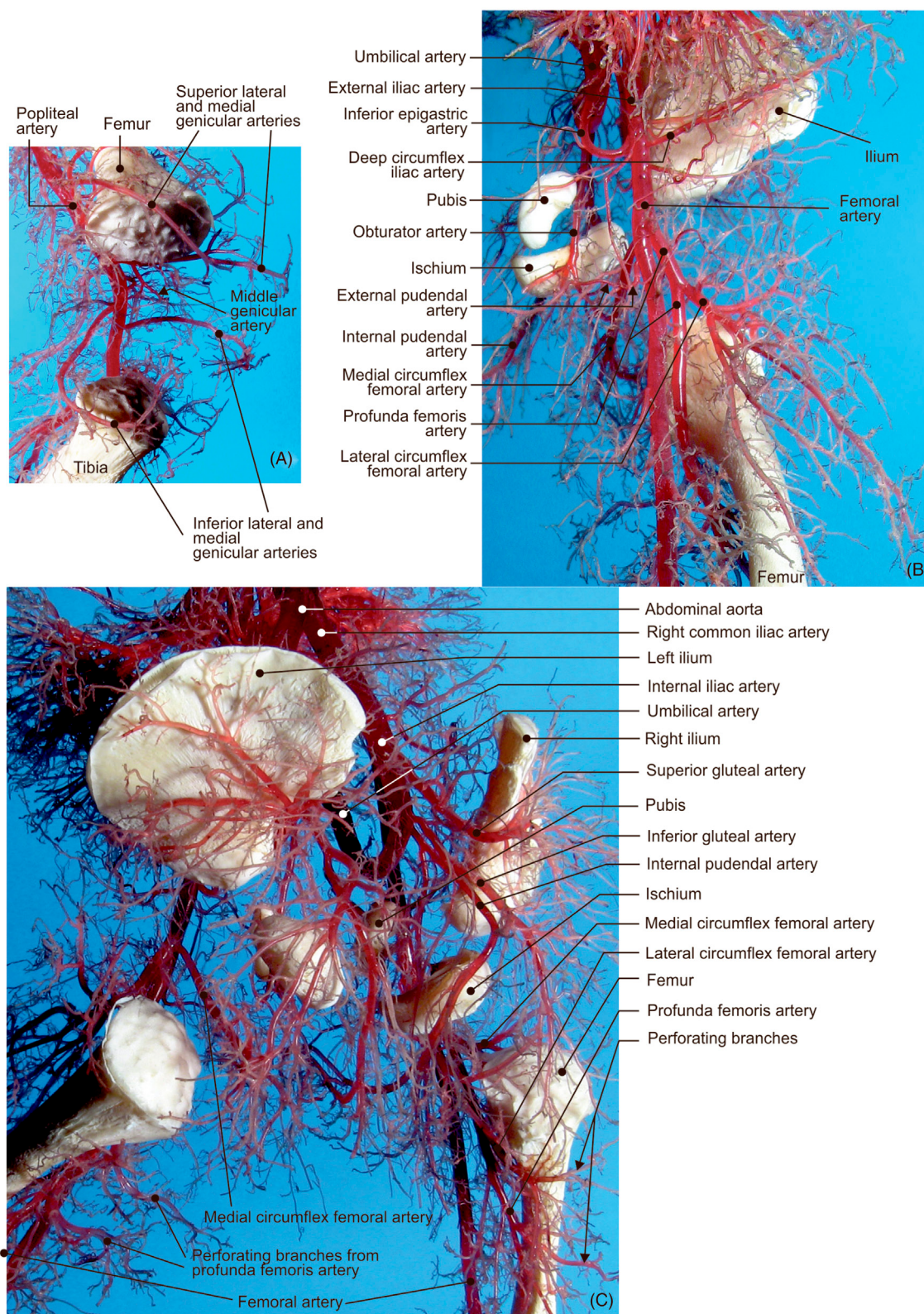


FIGURE 2.26 The fetal left limb. Arterial distribution (corrosion casts) around the (A) knee region, (B) anterior aspect of thigh, and (C) gluteal region.

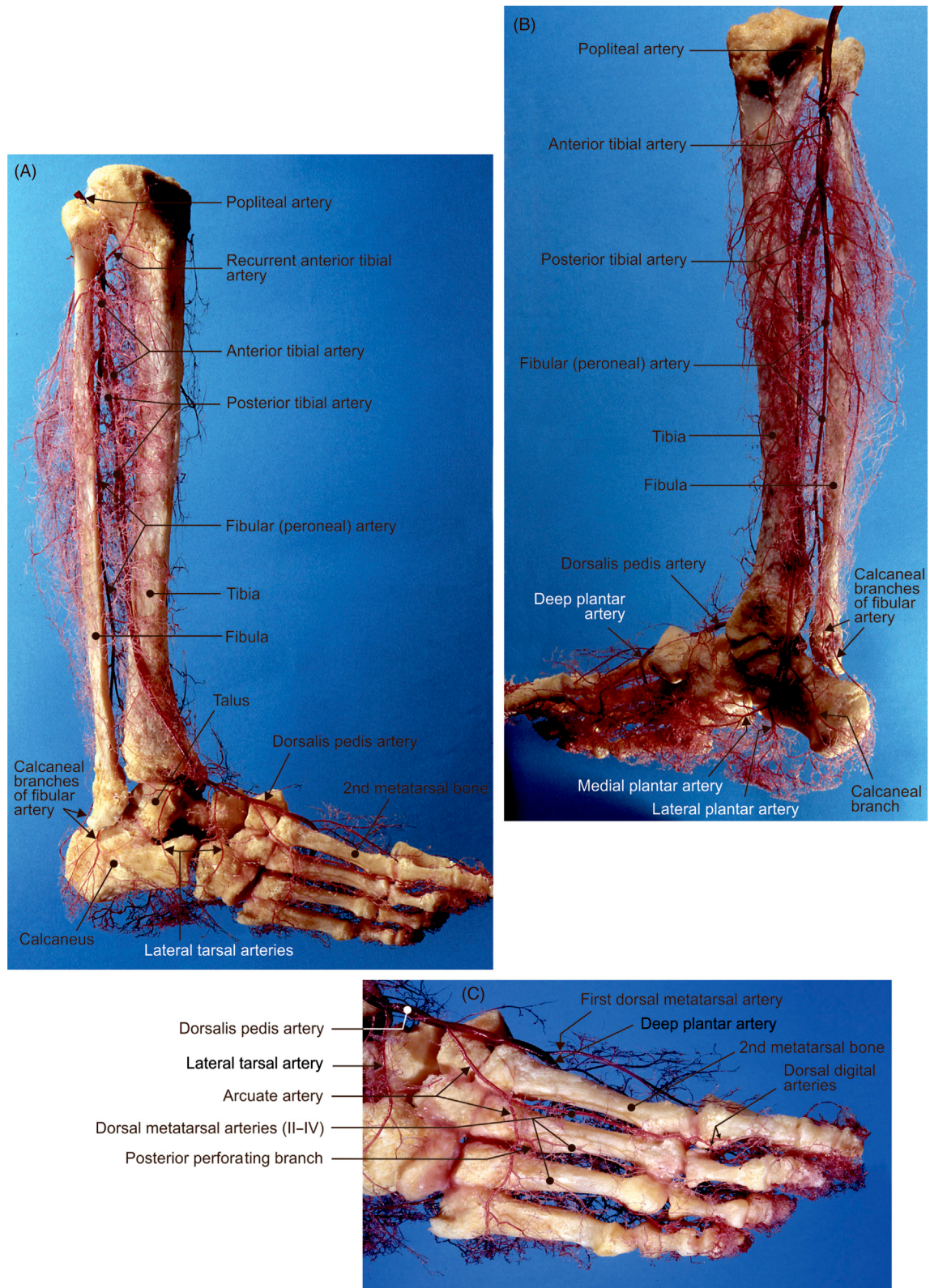


FIGURE 2.27 Arterial distributions (corrosion cast) along the (A) lateral and (B) medial aspects of the right leg and (C) dorsal aspect of the right foot.

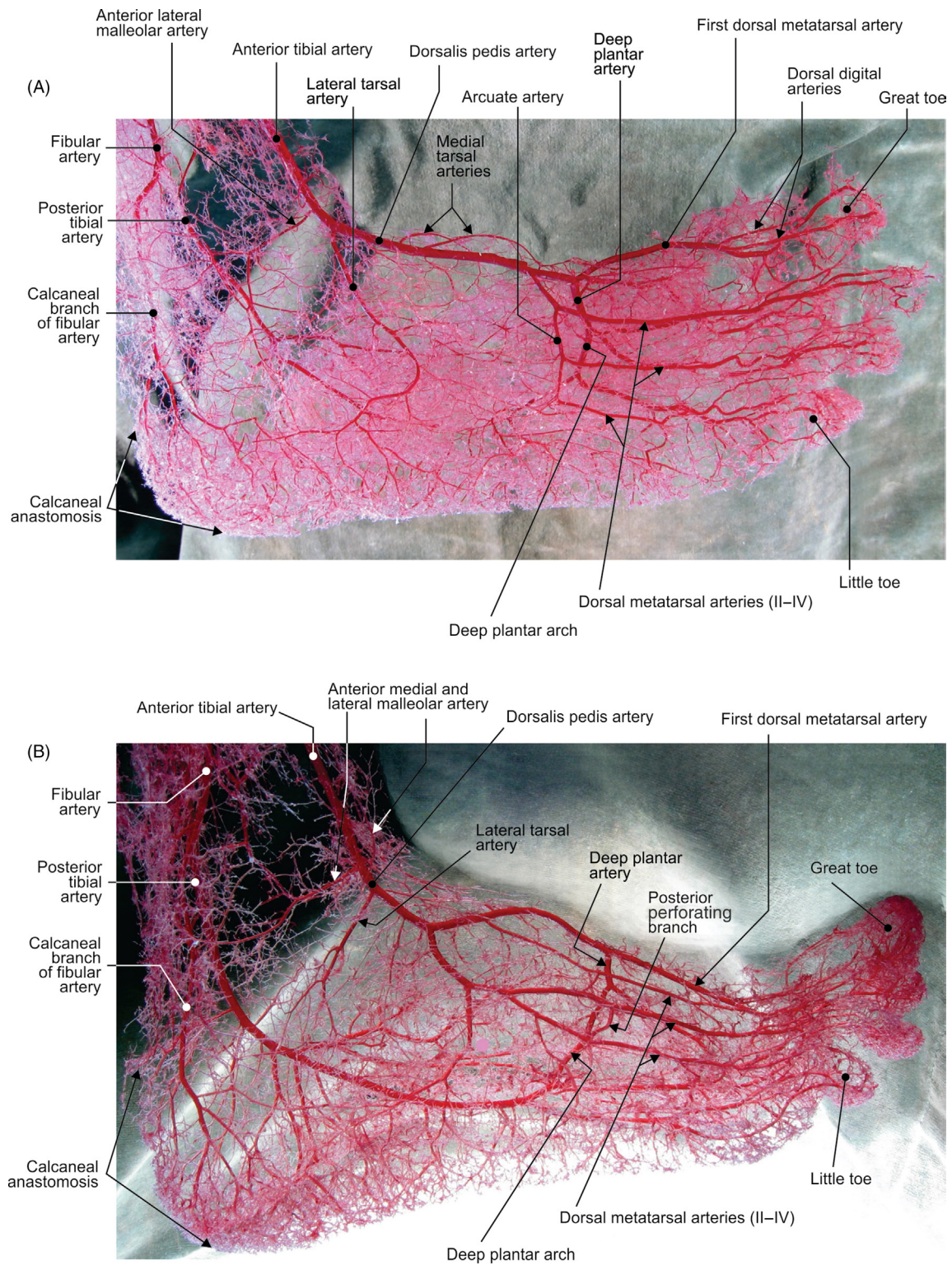


FIGURE 2.28 (A–B) Different specimens depicting arterial distributions (corrosion casts) along the dorsal aspect of the right foot.

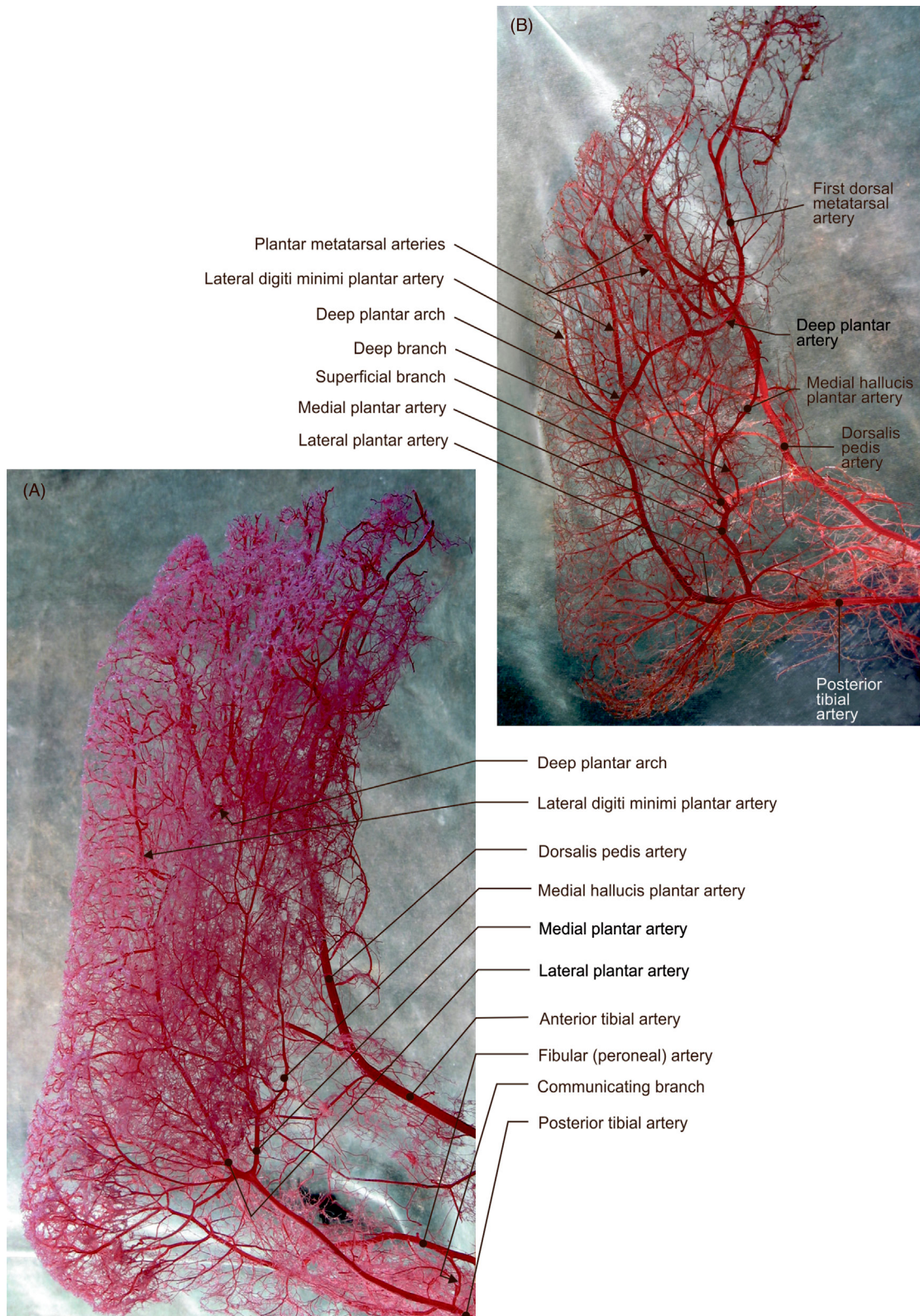


FIGURE 2.29 (A–B) Different specimens depicting arterial distributions (corrosion casts) along the plantar aspect of the right foot.

Chapter 3

Thorax and Vascularization

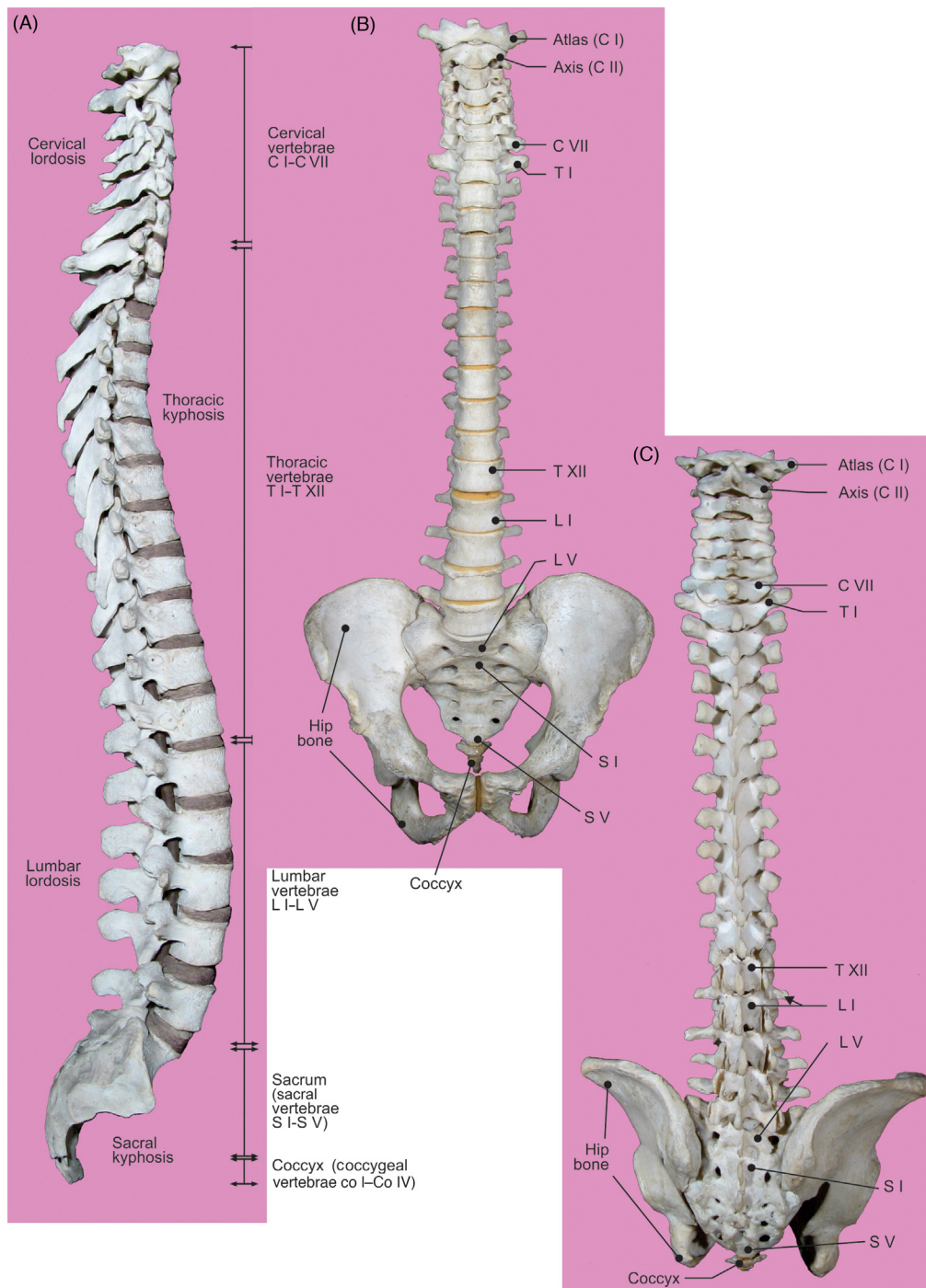


FIGURE 3.1 The vertebral column and bony pelvis. (A) Right, (B) anterior, and (C) posterior aspects.

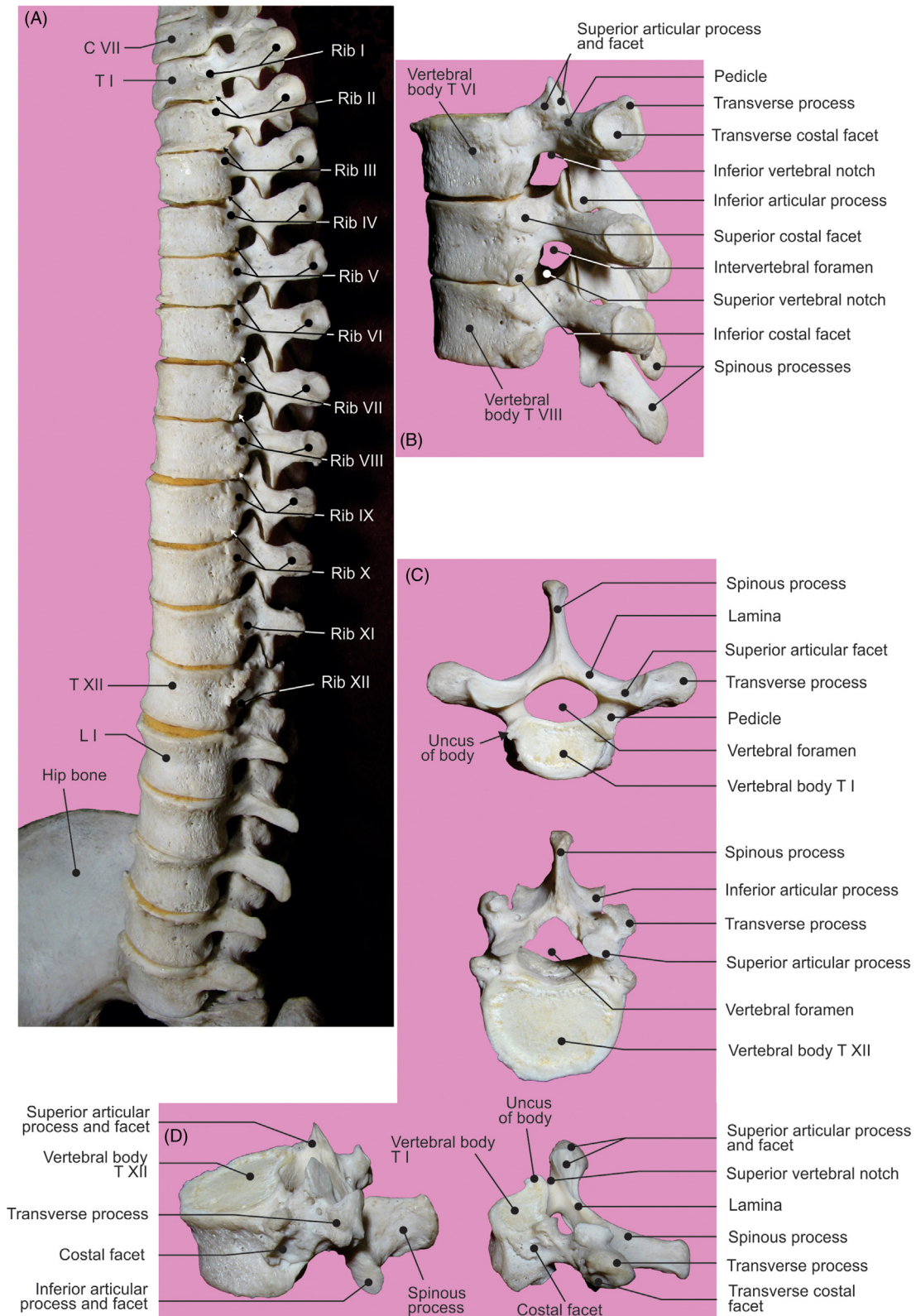


FIGURE 3.2 Thoracic segment of the (A) vertebral column and (B) lateral view of T6–T8 vertebrae. T1 and T12 vertebrae: (C) superior and (D) lateral views.

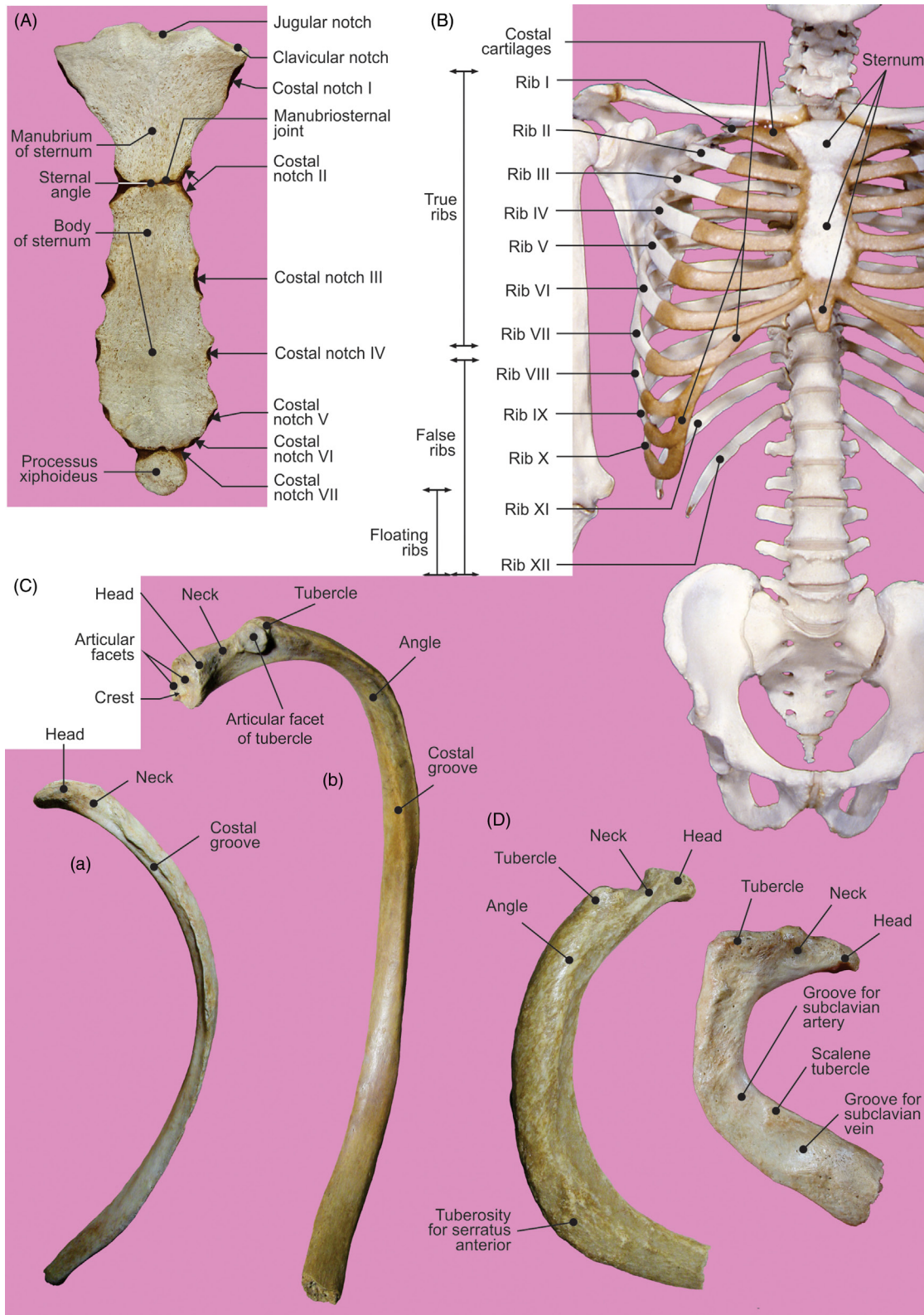


FIGURE 3.3 (A) Sternum: anterior view. (B) Rib cage: anterior view. (C) (a) 11th rib: inferior view and (b) typical rib (3rd–10th): inferior view. (D) 1st and 2nd right ribs: superior view.

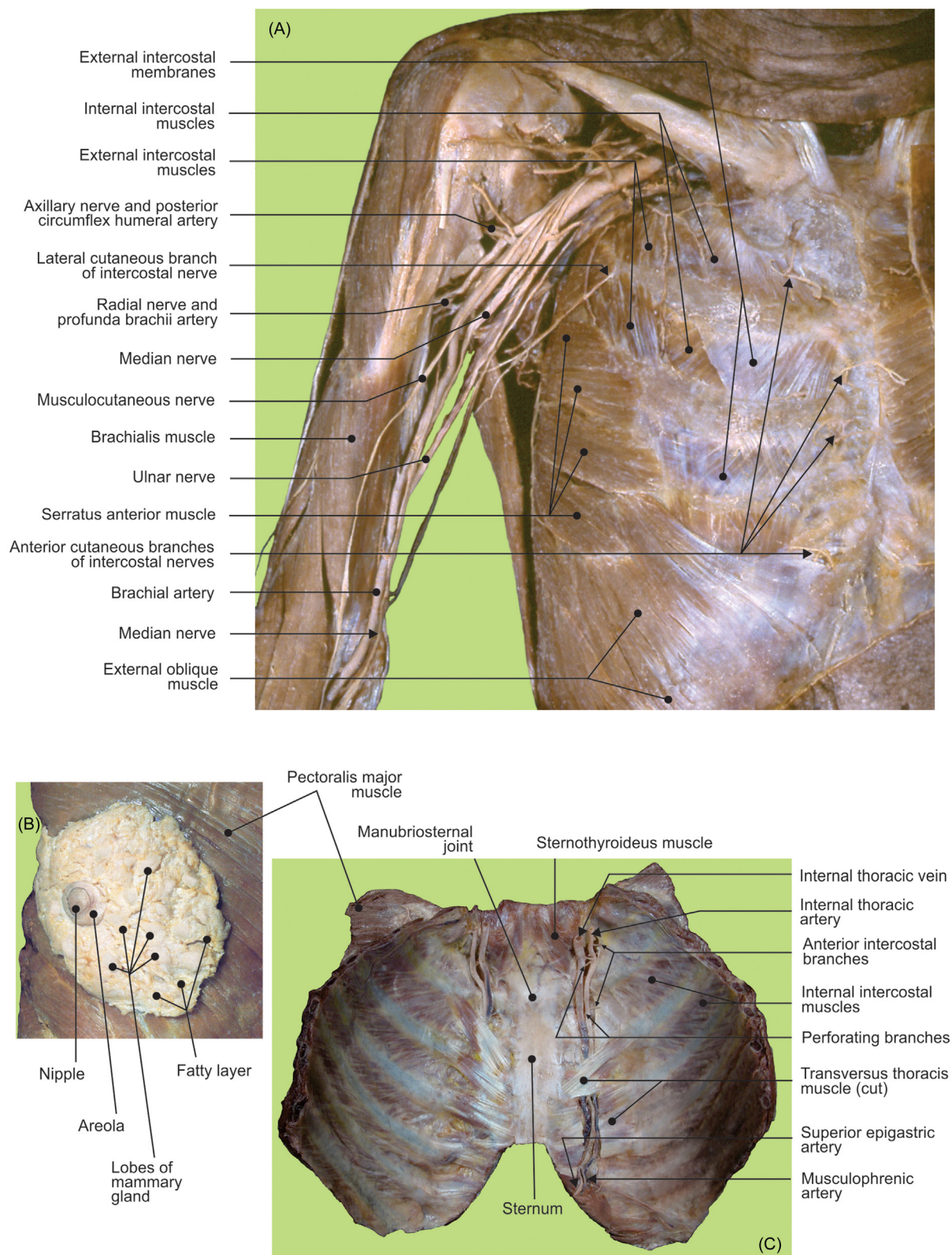


FIGURE 3.4 (A) Pectoral and axillary regions. (B) Dissected mammary gland. (C) Thoracic cage: posterior aspect of the anterior segment.

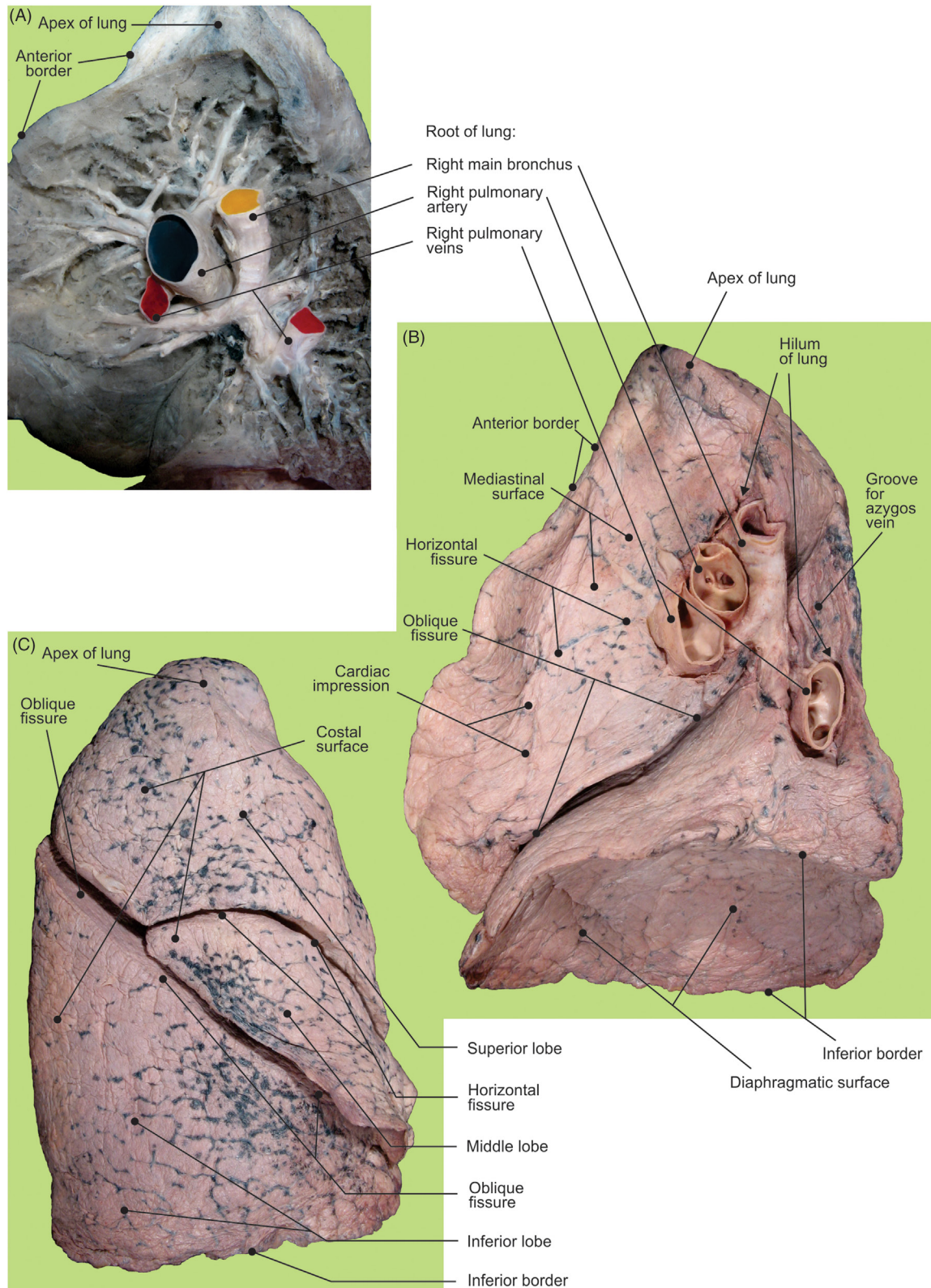


FIGURE 3.5 The right lung. (A) Dissected structures of the pulmonary root inside the pulmonary tissue. (B–C) Superficial elements and (C) structures of the pulmonary root.

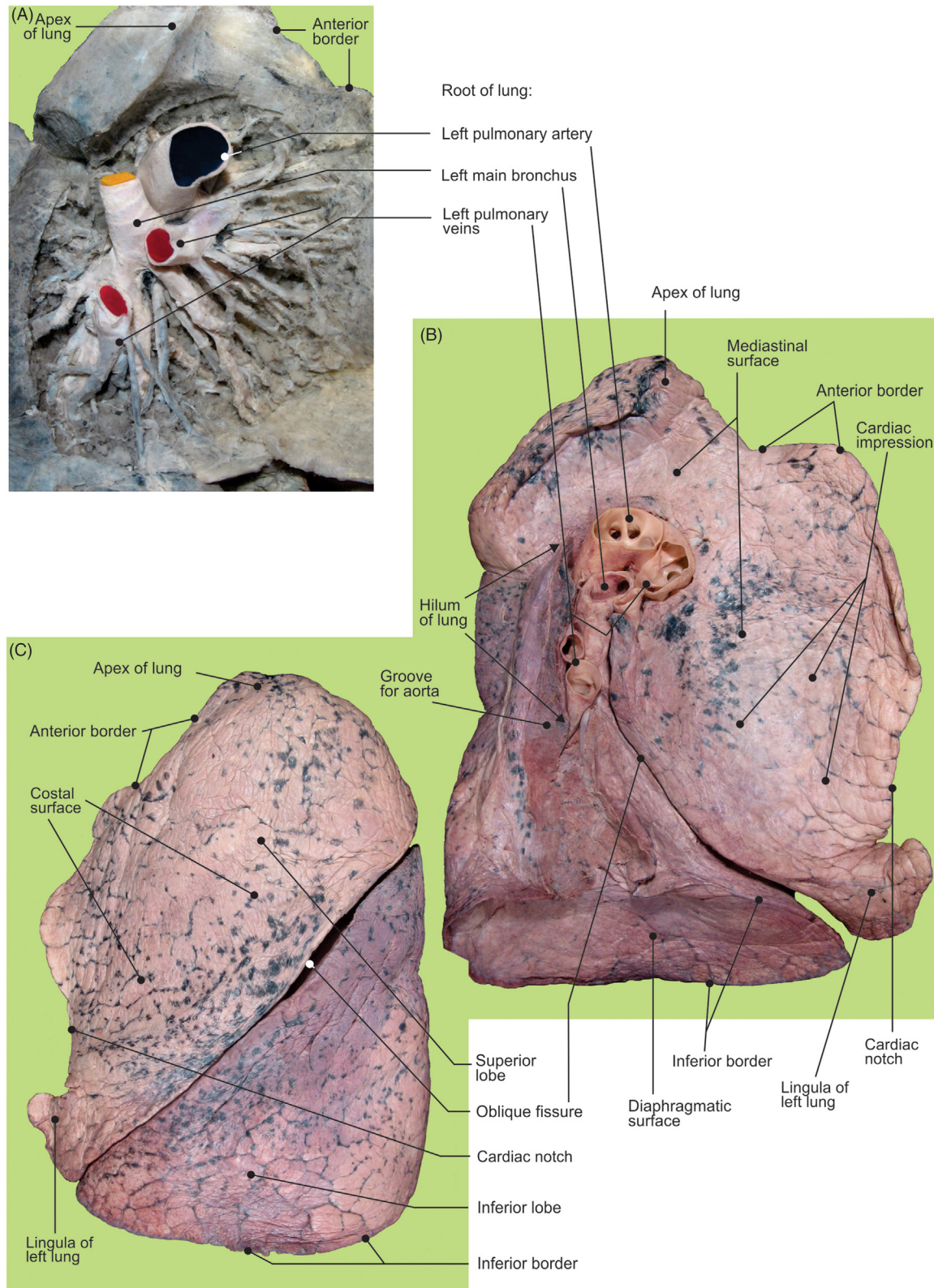


FIGURE 3.6 The left lung. (A) Dissected structures of the pulmonary root inside the pulmonary tissue. (B–C) Superficial elements and (C) structures of the pulmonary root.

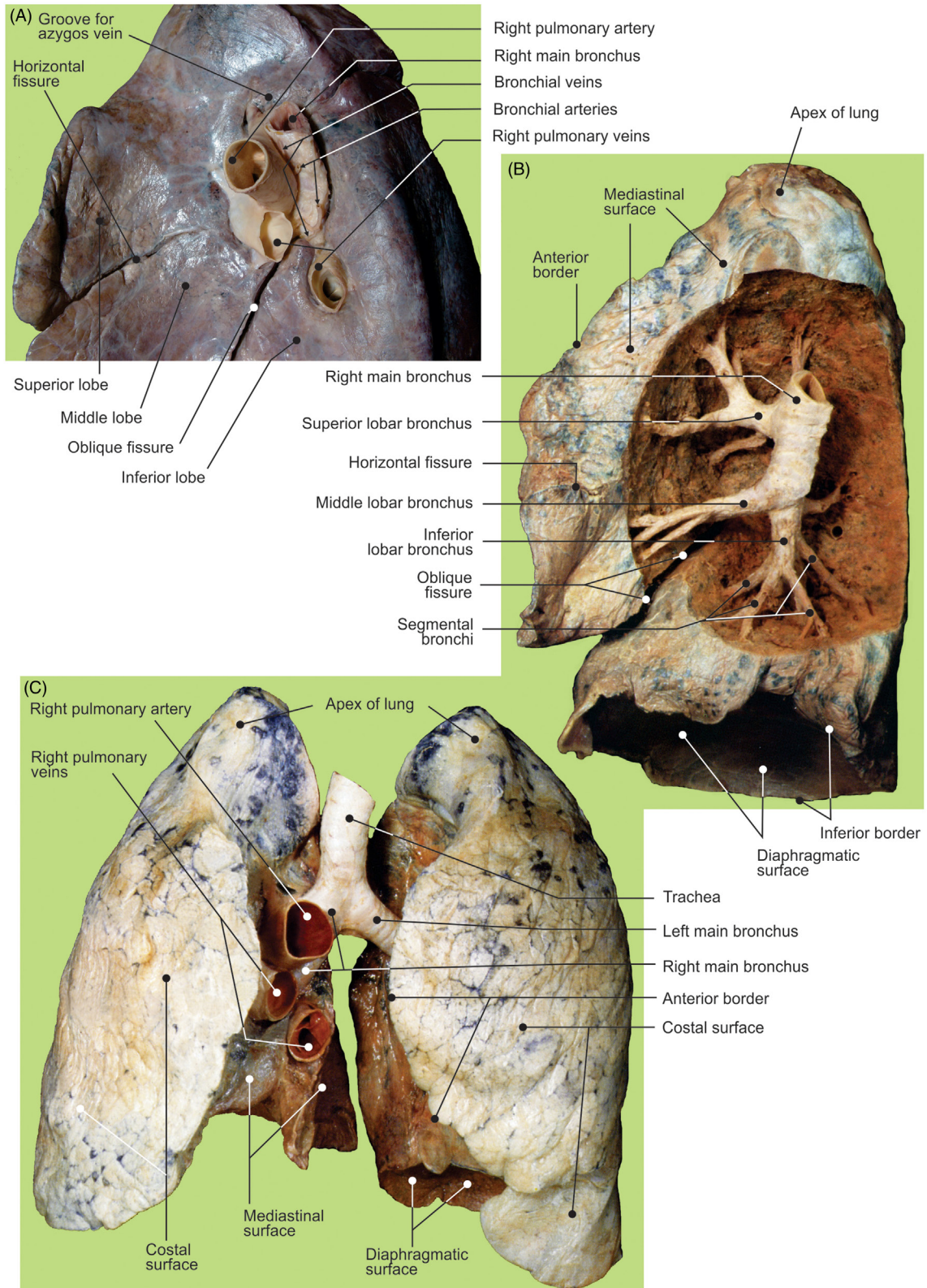


FIGURE 3.7 The right lung. (A) Mediastinal surface and tracheobronchial trunk. (B) Primary, secondary, and tertiary bronchi inside the pulmonary tissue. (C) The anterior aspect of lungs, trachea, and bronchi.

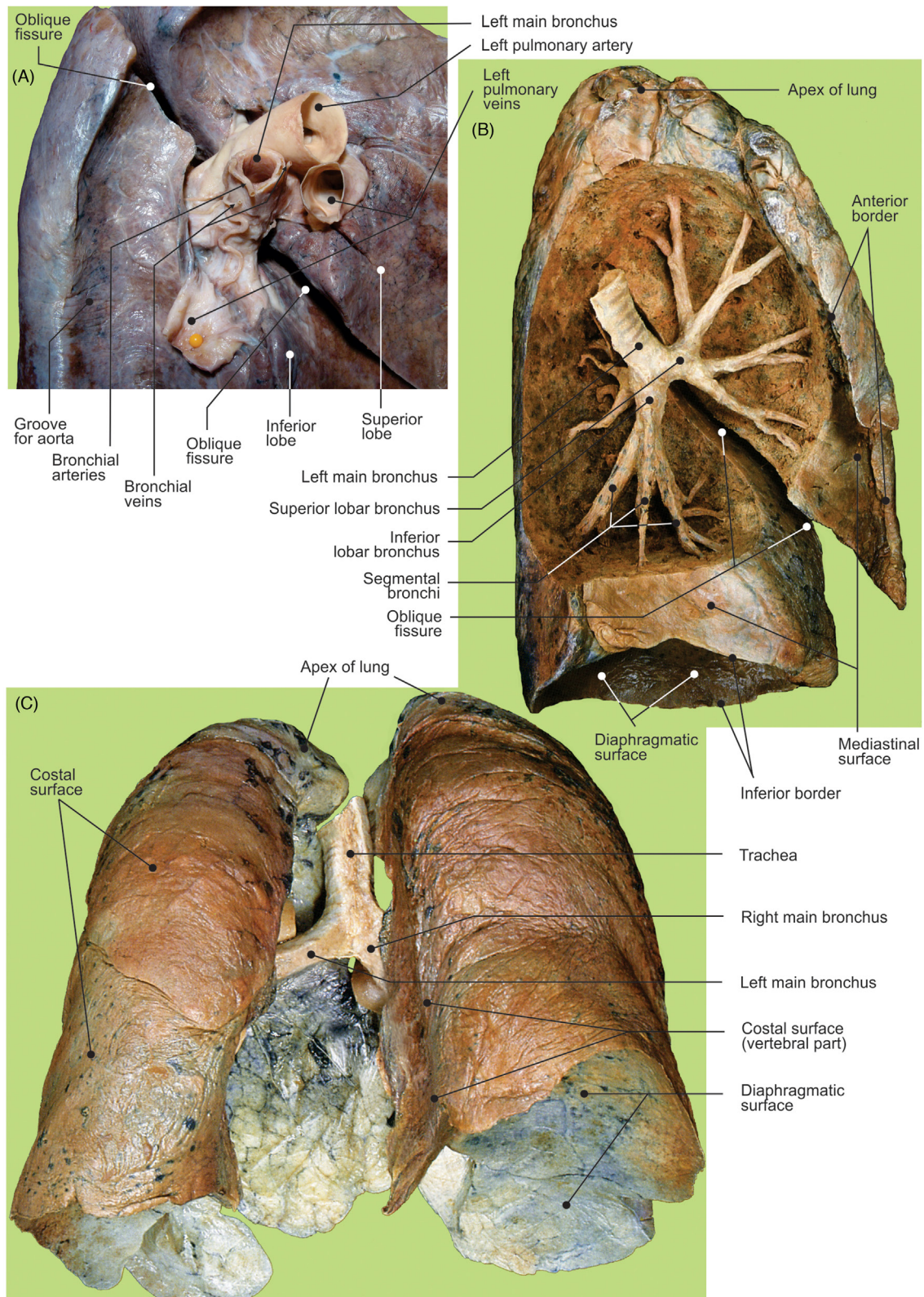


FIGURE 3.8 The left lung. (A) Mediastinal surface and tracheobronchial trunk. (B) Primary, secondary, and tertiary bronchi inside the pulmonary tissue. (C) Posterior aspect of lungs, trachea, and bronchi.

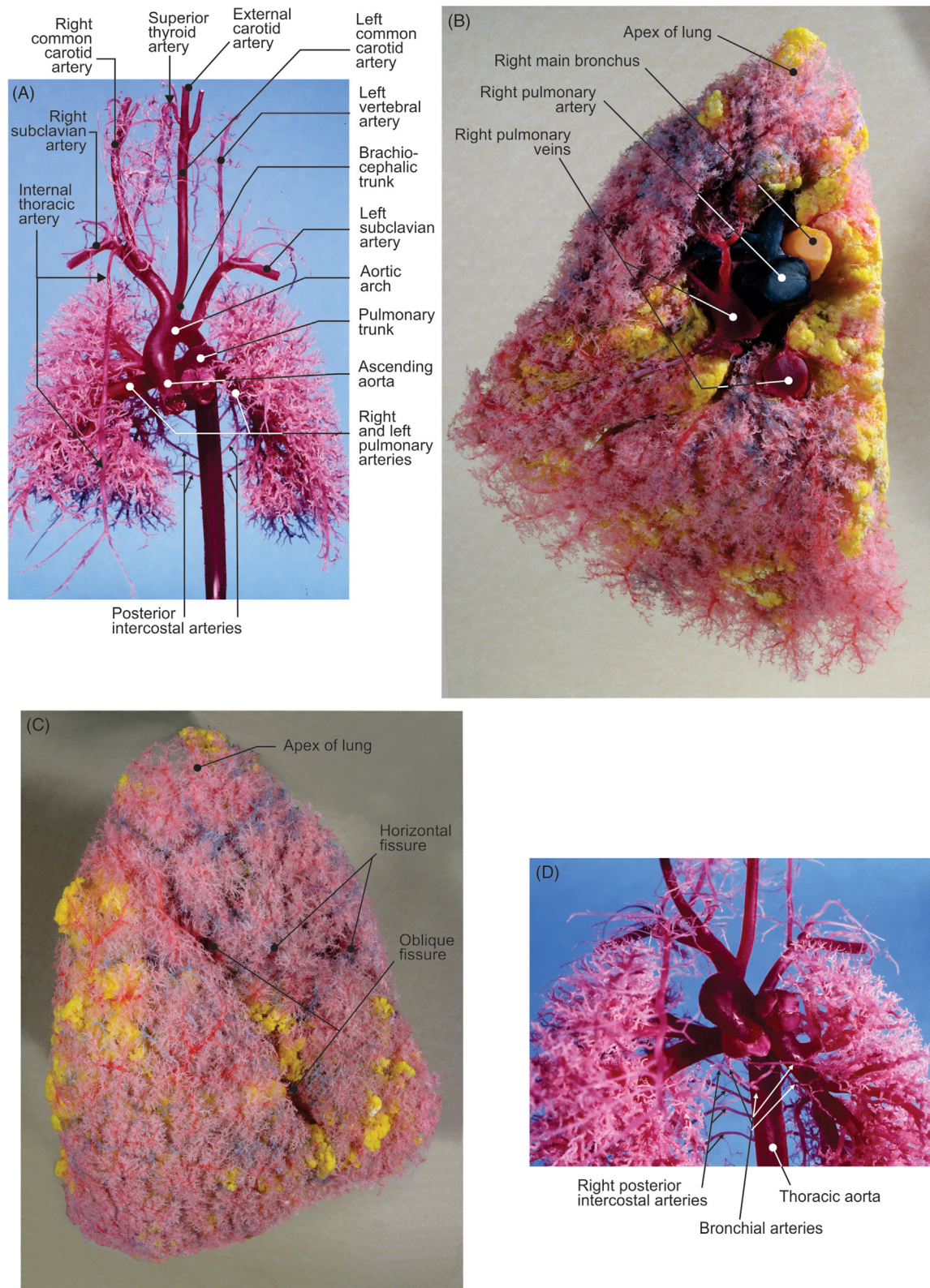


FIGURE 3.9 (A) Branching of pulmonary arteries and aorta (corrosion cast, fetus). (B–C) Right lung, corrosion cast: branching of the pulmonary artery (blue), pulmonary veins (red), and bronchial trunk (yellow); (B) mediastinal surface and (C) costal surface. (D) Bronchial arteries (corrosion cast, fetus).

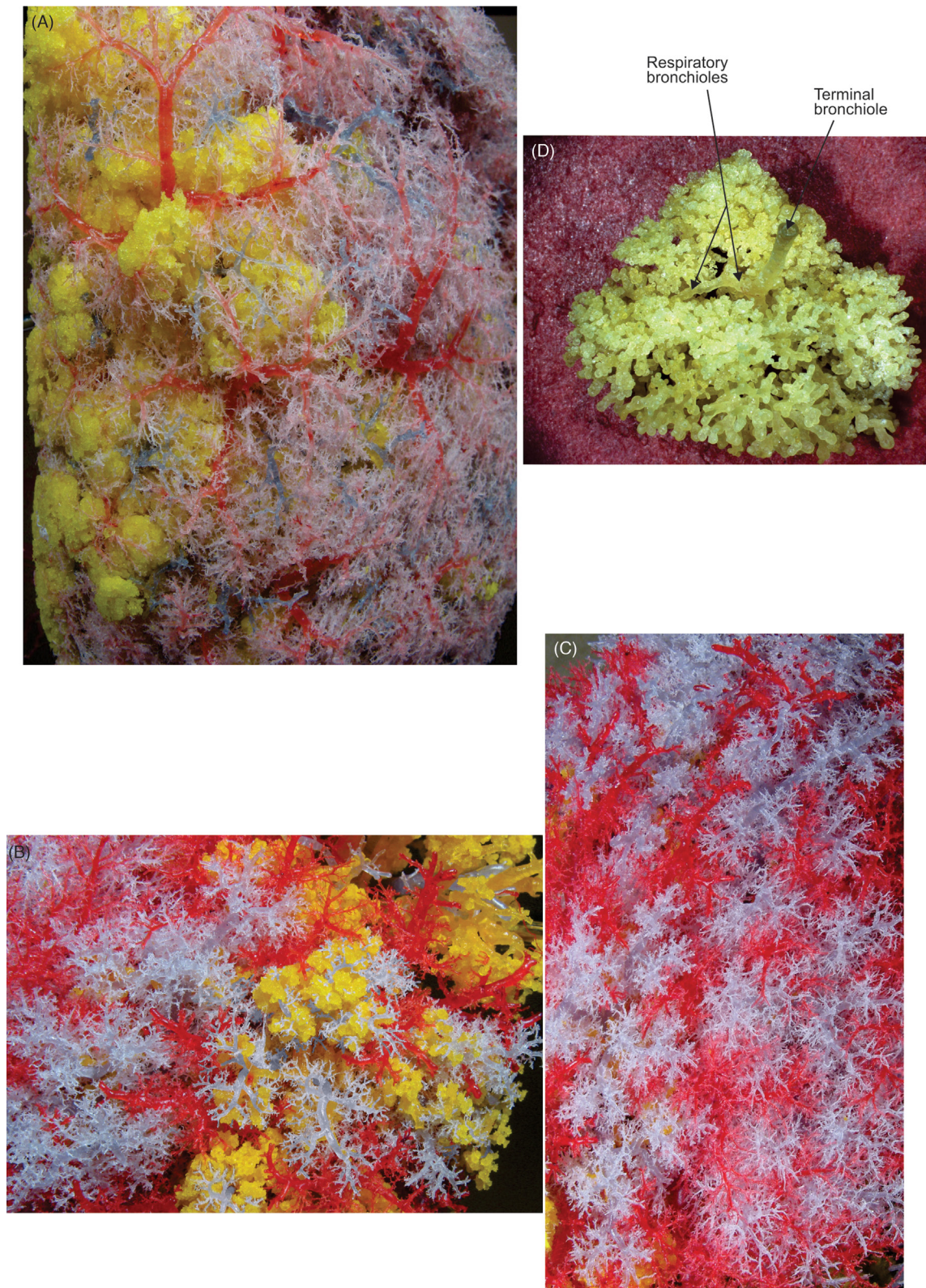


FIGURE 3.10 (A–C) Branching of the pulmonary artery (*blue*) follows bronchial stem (*yellow*), while tributaries of pulmonary veins (*red*) are peripheral (corrosion cast). (D) Terminal bronchiole continues as respiratory bronchiole, alveolar sac, and, eventually, pulmonary alveoli (corrosion cast).

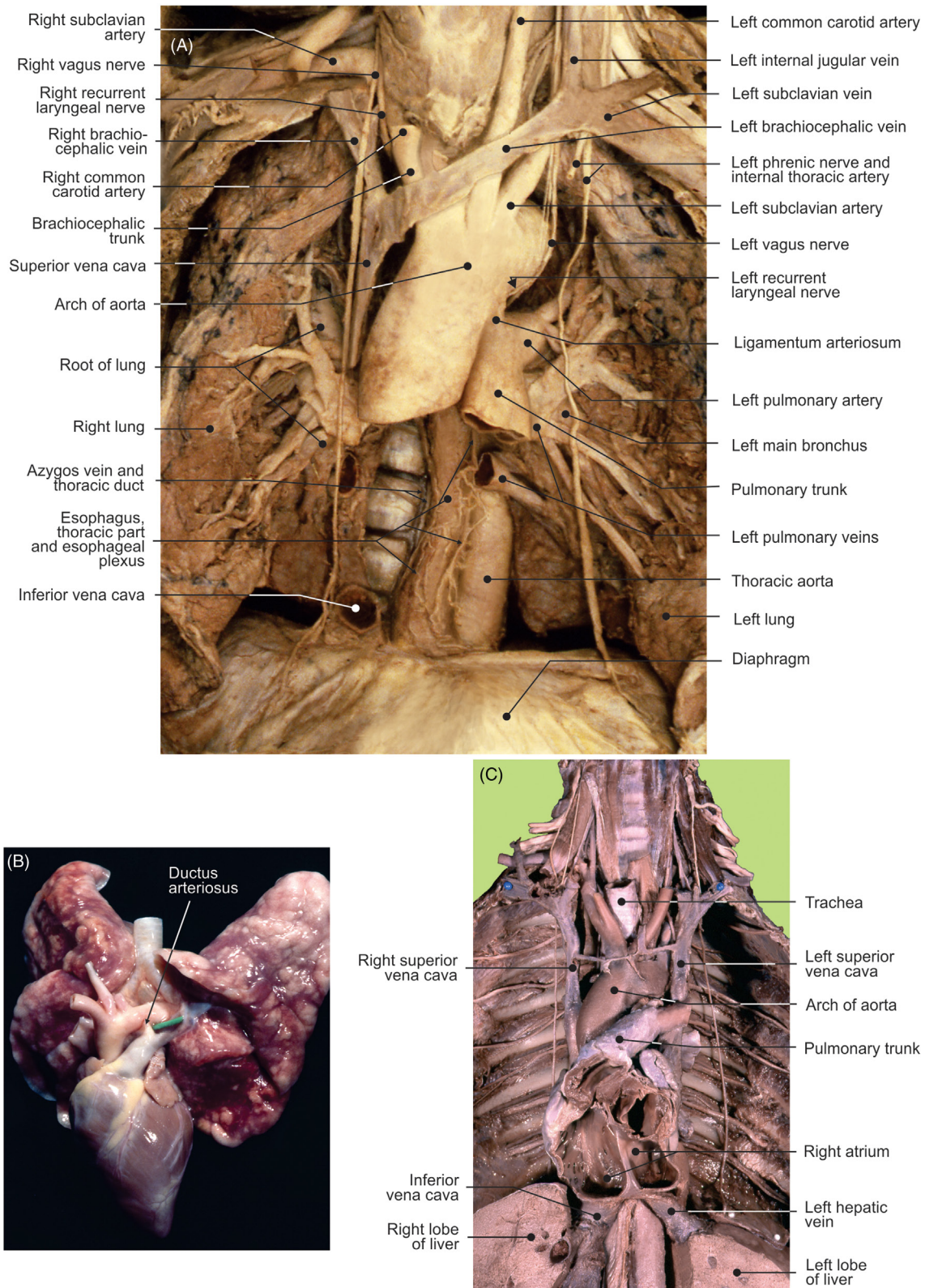


FIGURE 3.11 (A) The anterior aspect of lungs and mediastinum in situ after the heart has been removed (layer of blood vessels). (B) The anterior aspect of fetal lungs and heart. (C) Double superior caval vein.

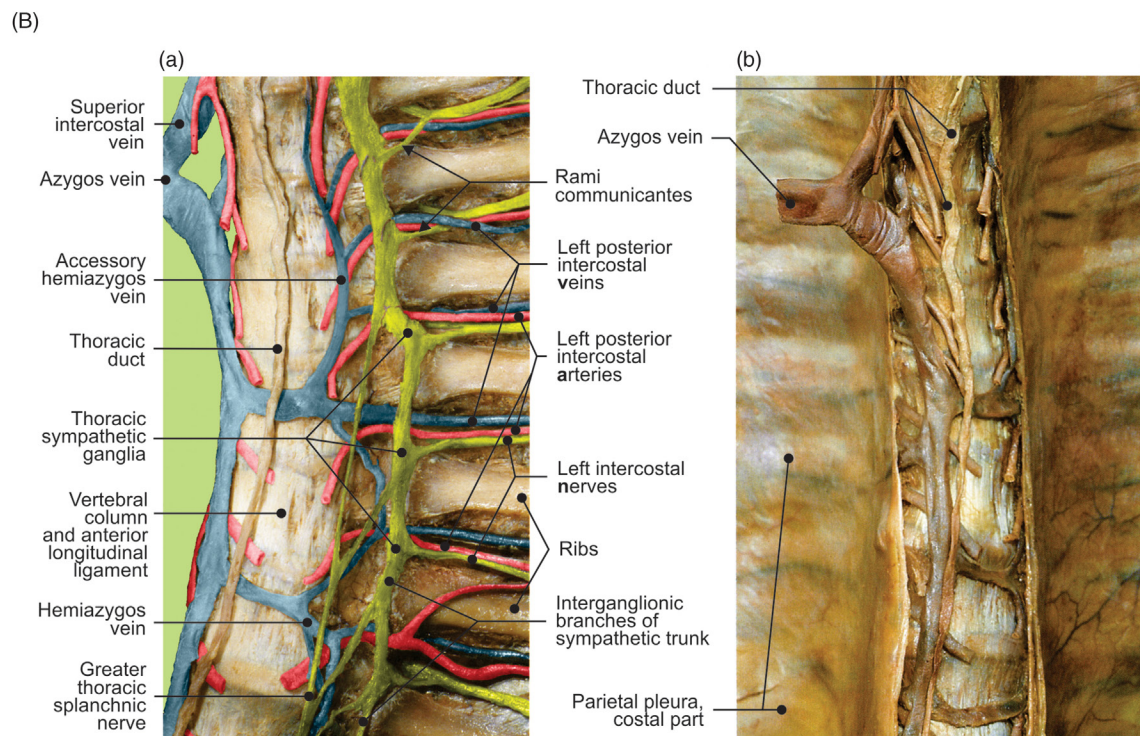
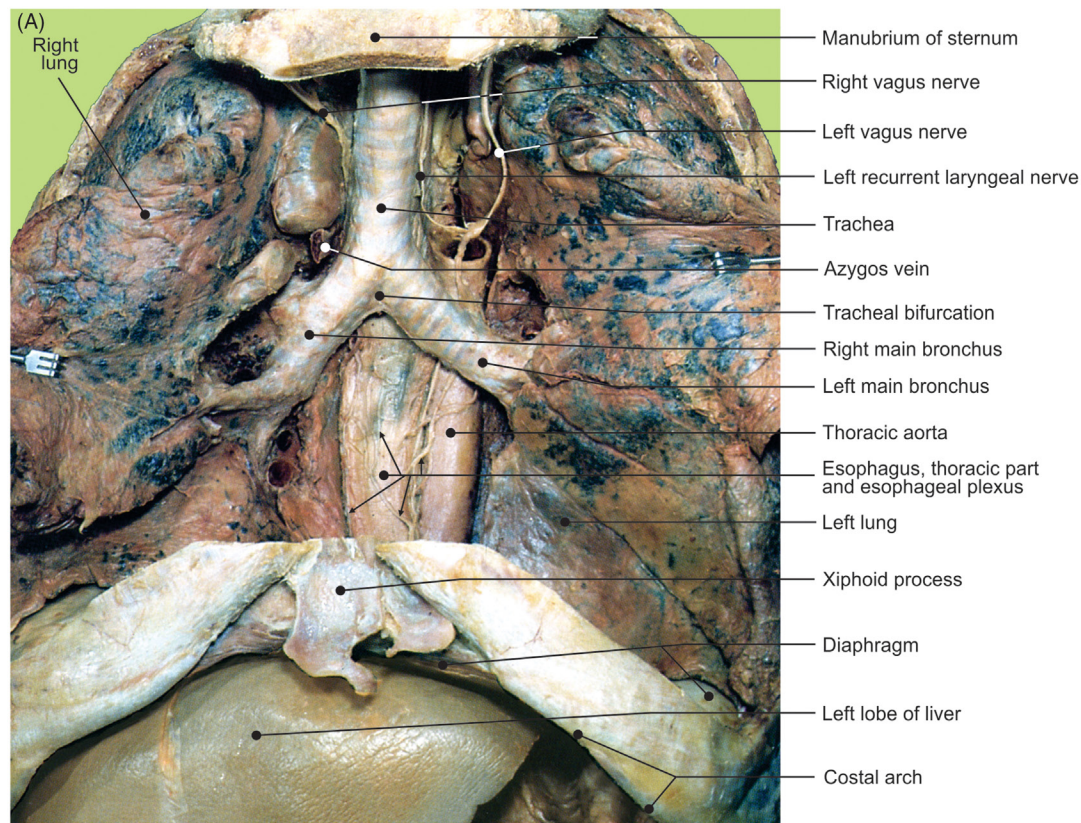


FIGURE 3.12 (A) The anterior aspect of lungs and mediastinum in situ. The major blood vessels and heart have been removed. (B) Posterior mediastinum (a) with blood vessels and nerves and (b) after removal of costal pleura.

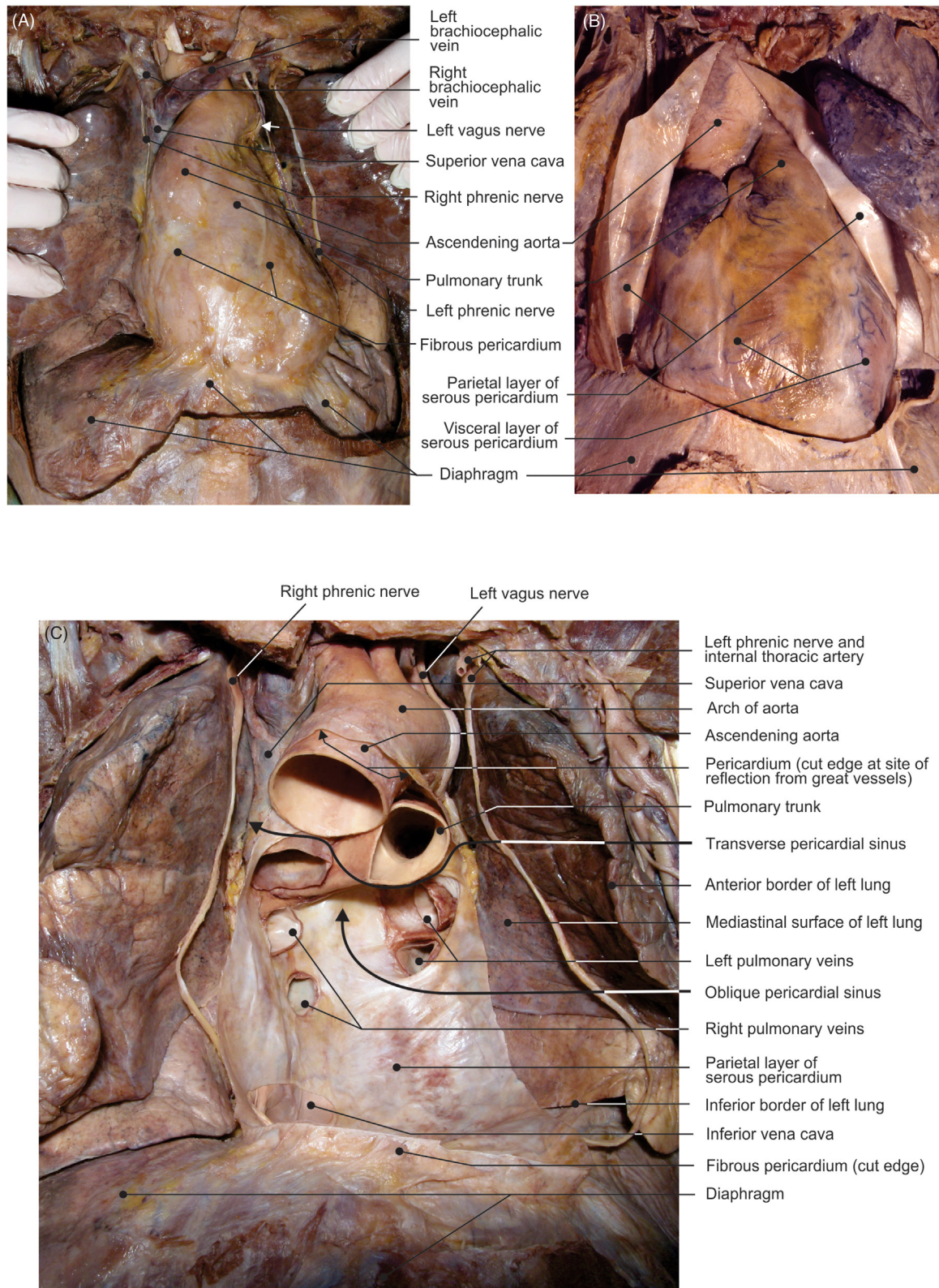


FIGURE 3.13 (A) Heart and pericardium in situ. (B) The anterior aspect of the heart. (C) The pericardial cavity after the heart has been removed.

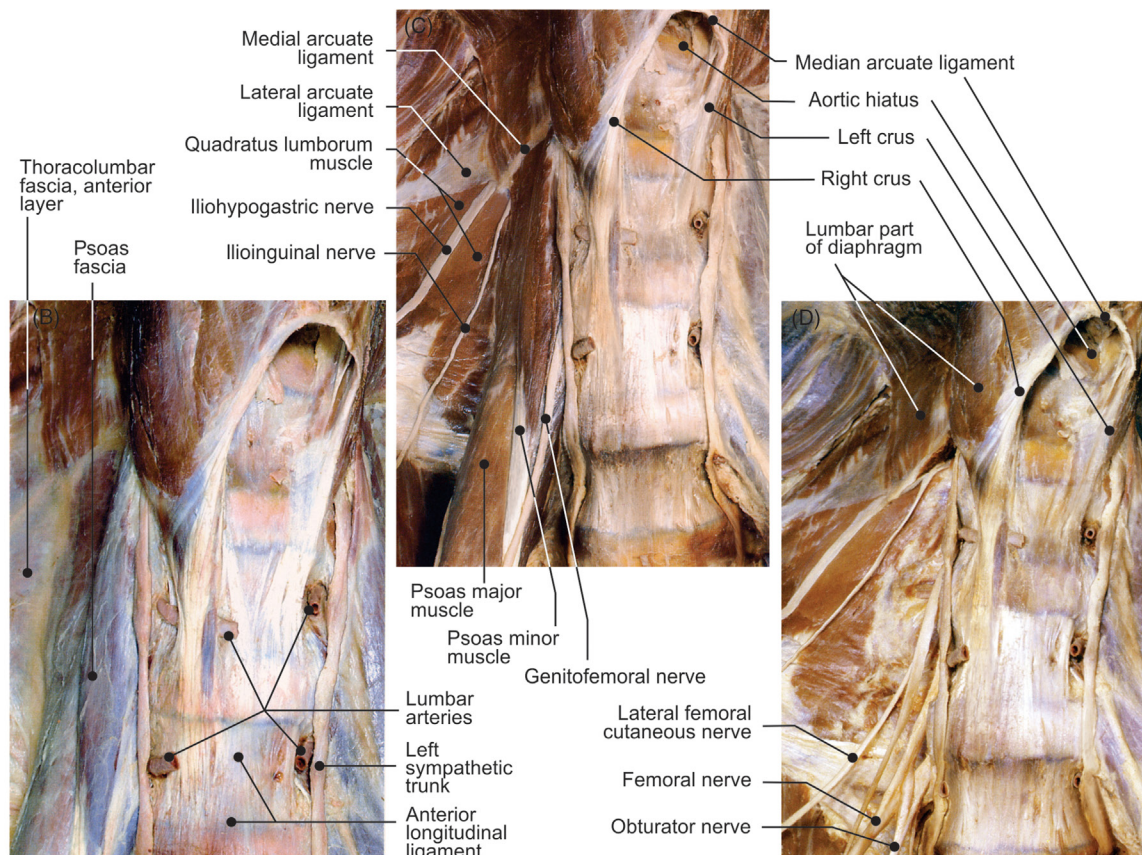
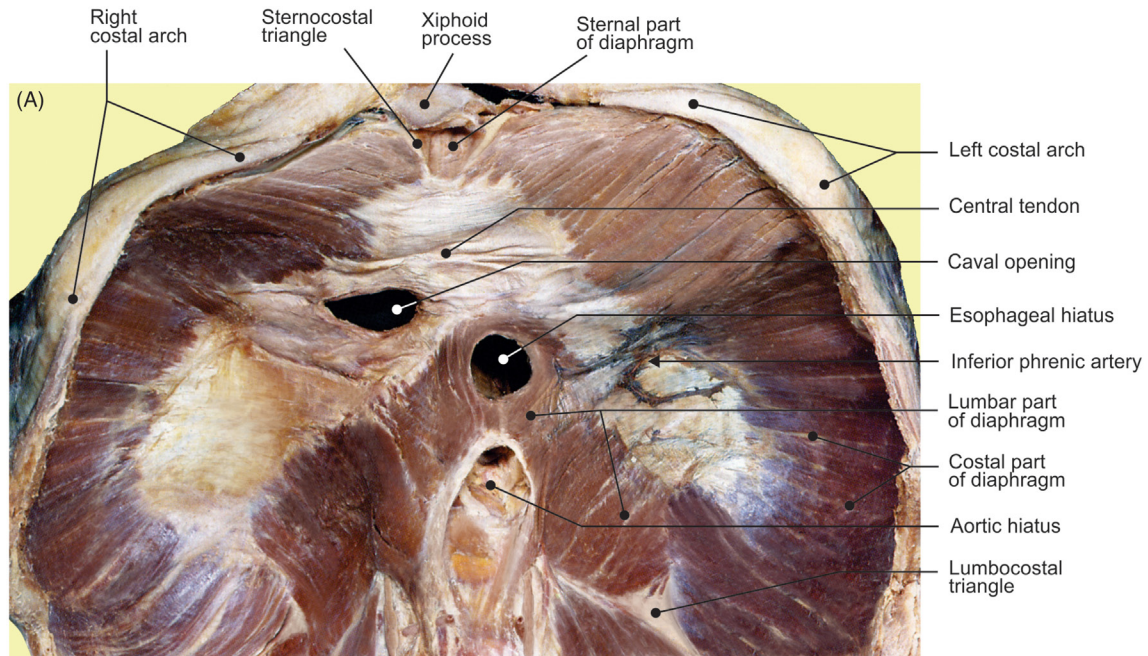


FIGURE 3.14 (A) The abdominal surface of the diaphragm. (B–D) Different layers of the anterior aspect of the lumbar part of diaphragm and parts of the posterior abdominal wall.

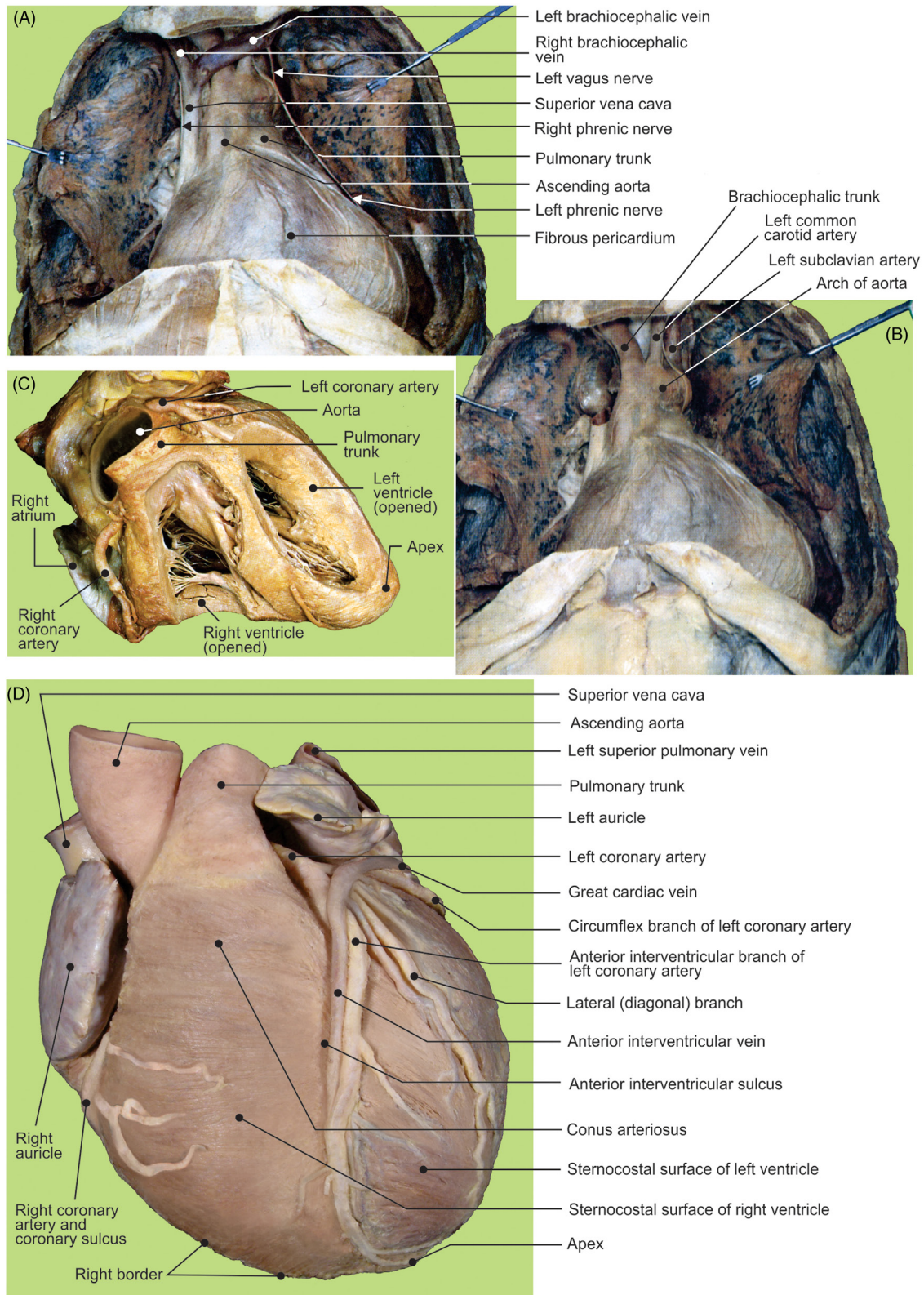


FIGURE 3.15 Superior mediastinum and heart in pericardium in situ: (A) venous and (B) arterial layers. (C) Anterior view of heart with opened ventricles. (D) Anterior view of heart.

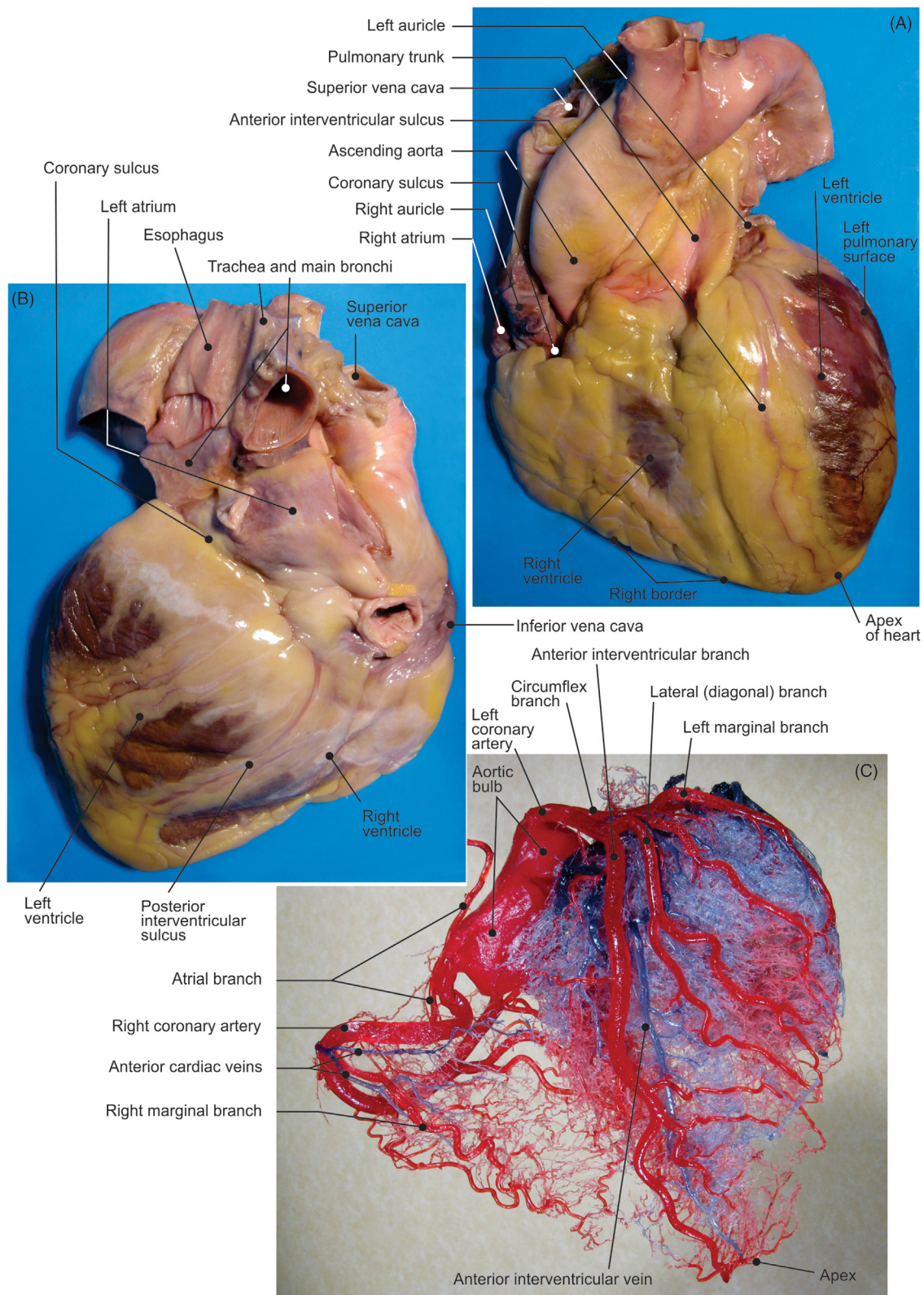


FIGURE 3.16 The native heart: (A) sternocostal surface and (B) diaphragmatic surface. (C) Anterior view: corrosion cast of cardiac arteries (*red*) and veins (*blue*).

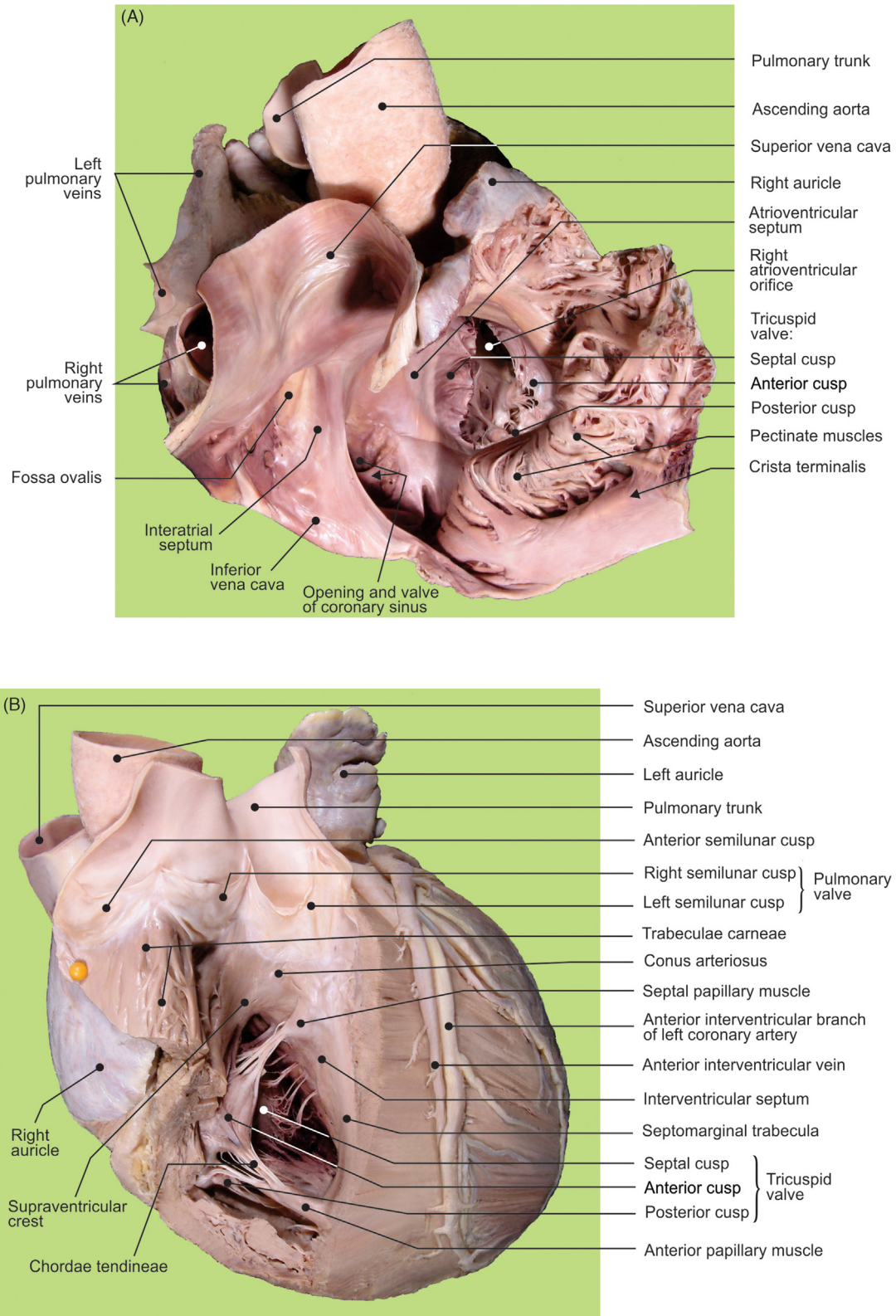


FIGURE 3.17 (A) The right atrium: view from above. (B) The right ventricle: view from the front.

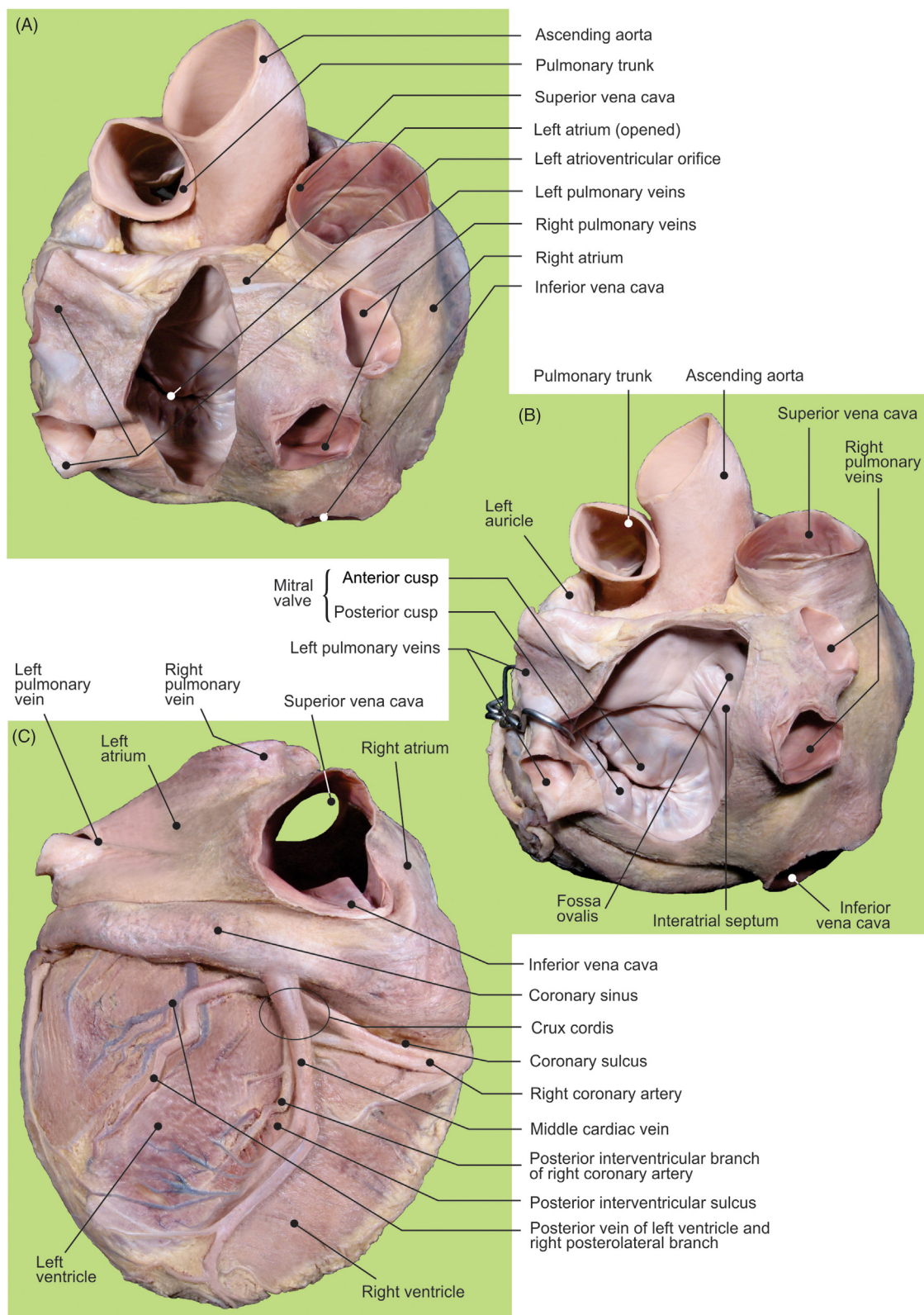


FIGURE 3.18 Cardiac base: (A) view from behind and (B) with open posterior wall. (C) Diaphragmatic surface of the heart.

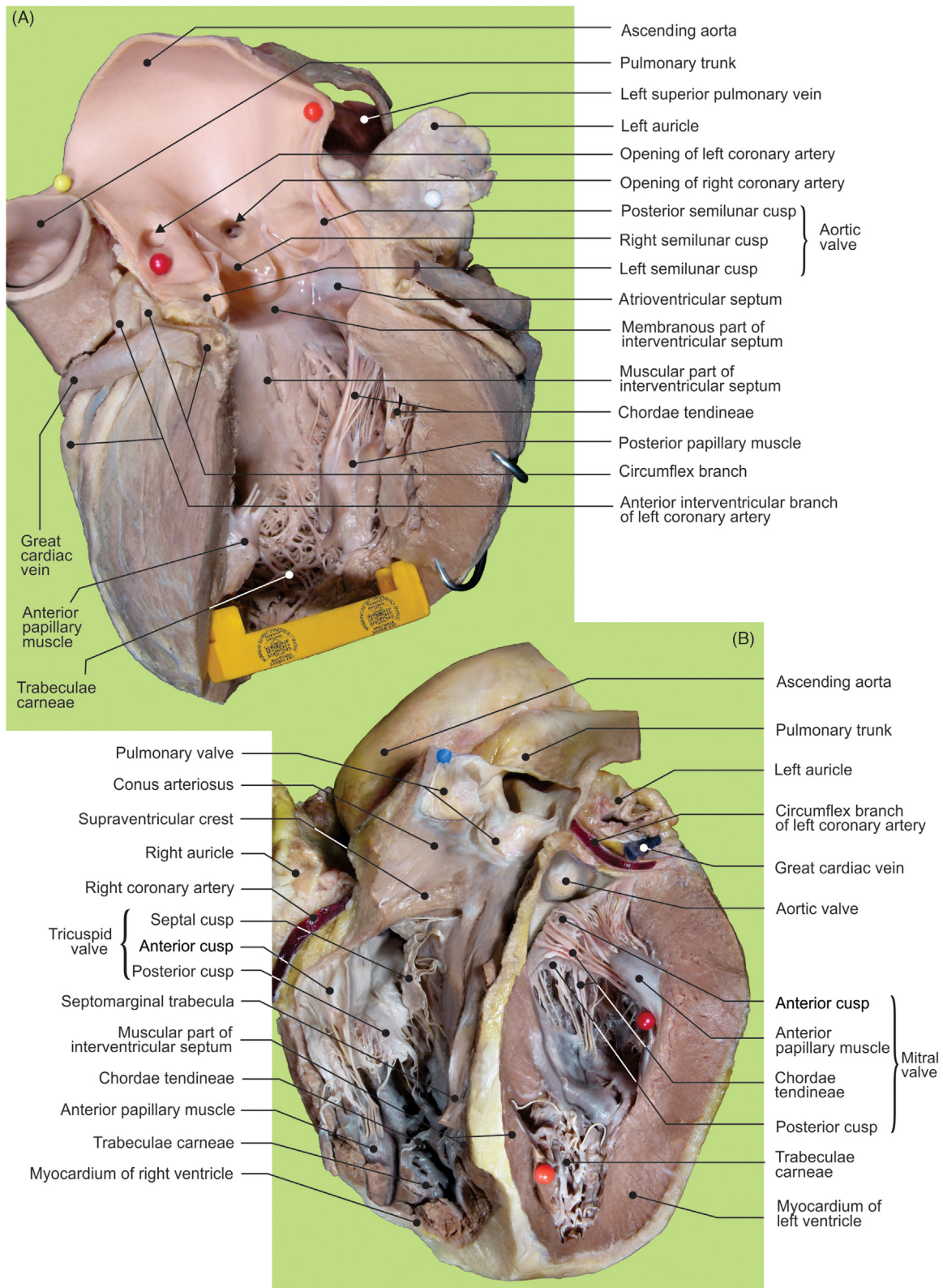


FIGURE 3.19 (A) Left ventricle: open longitudinally. (B) Right and left ventricles: removed anterior wall.

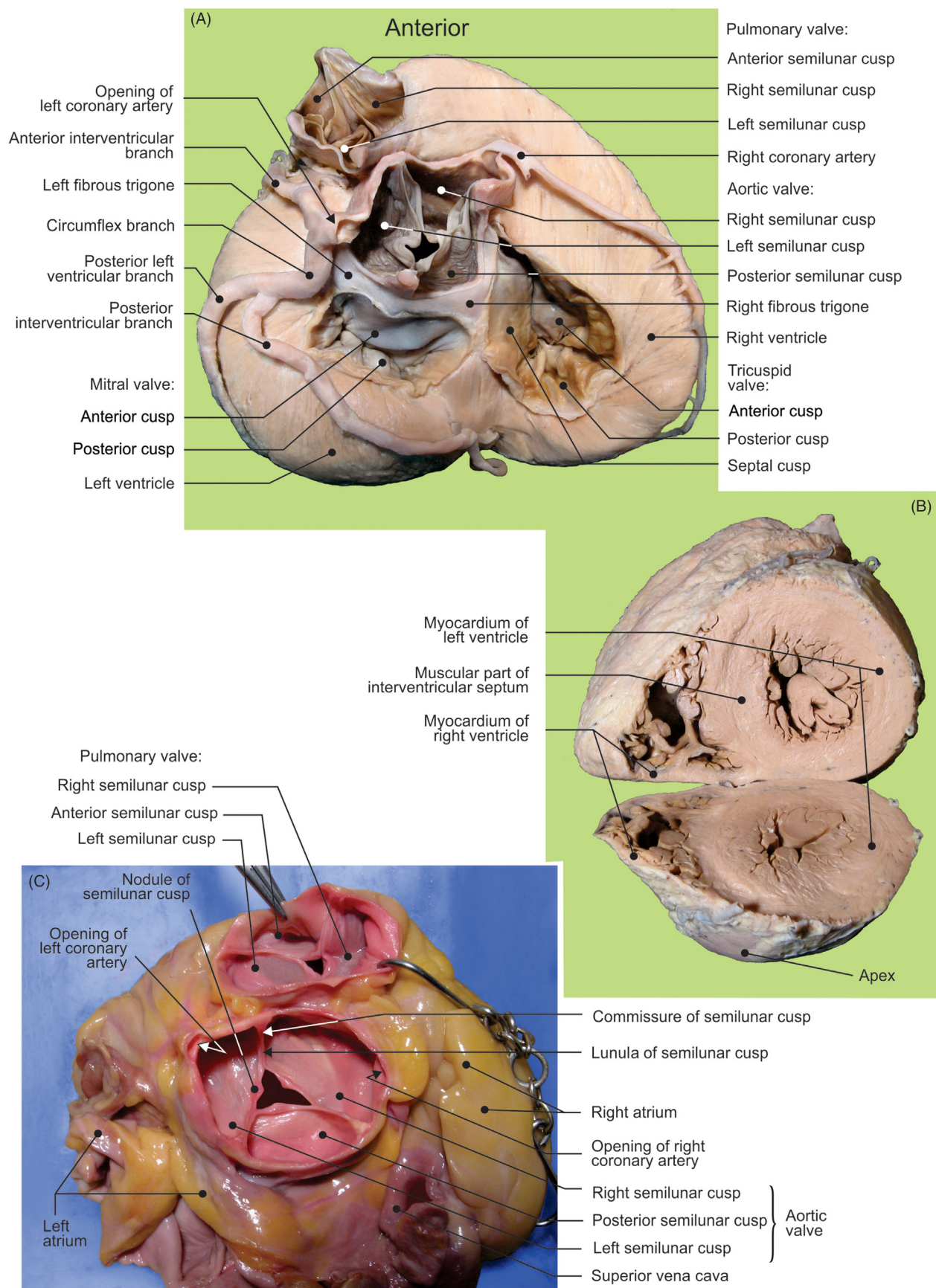


FIGURE 3.20 (A) Cardiac base with removed atria. (B) Transverse section of heart at level of apex. (C) Native specimen: semilunar valves.

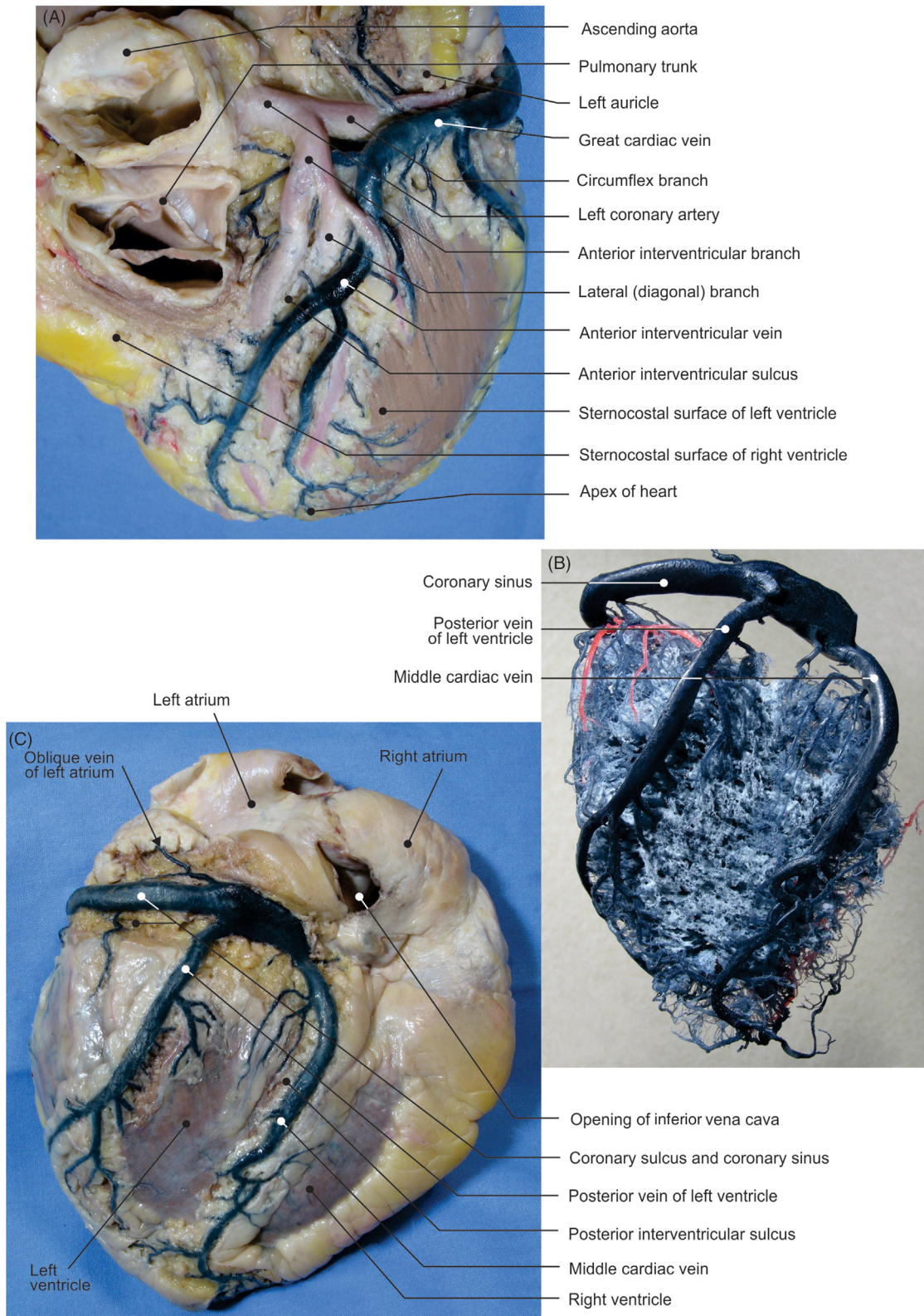


FIGURE 3.21 (A) The heart: anterosuperior aspect. Diaphragmatic surface of heart: (B) corrosion cast and (C) dissection.

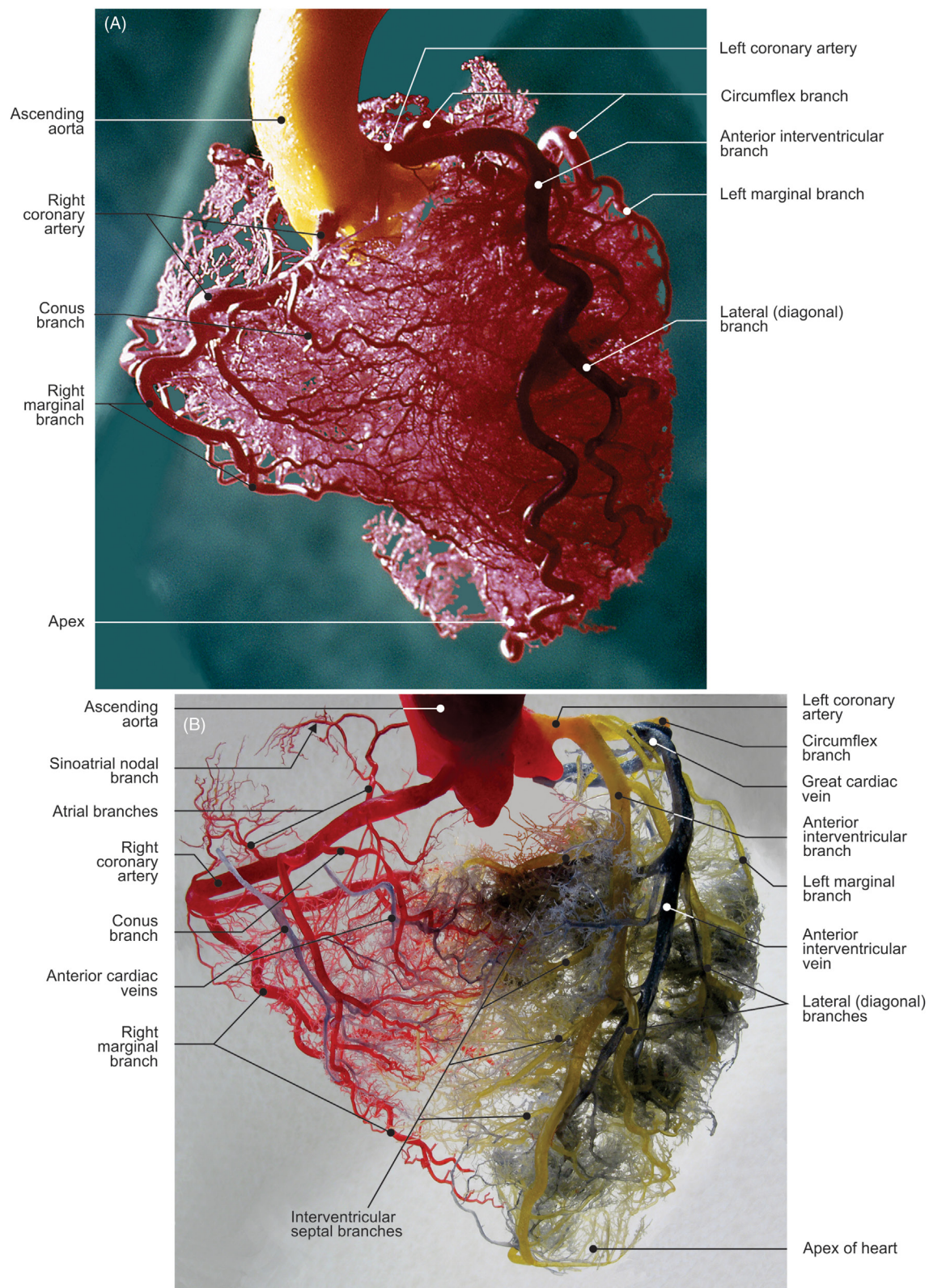


FIGURE 3.22 Sternocostal surface of the heart. (A–B) Different specimens of the arterial and venous distributions (corrosion casts).

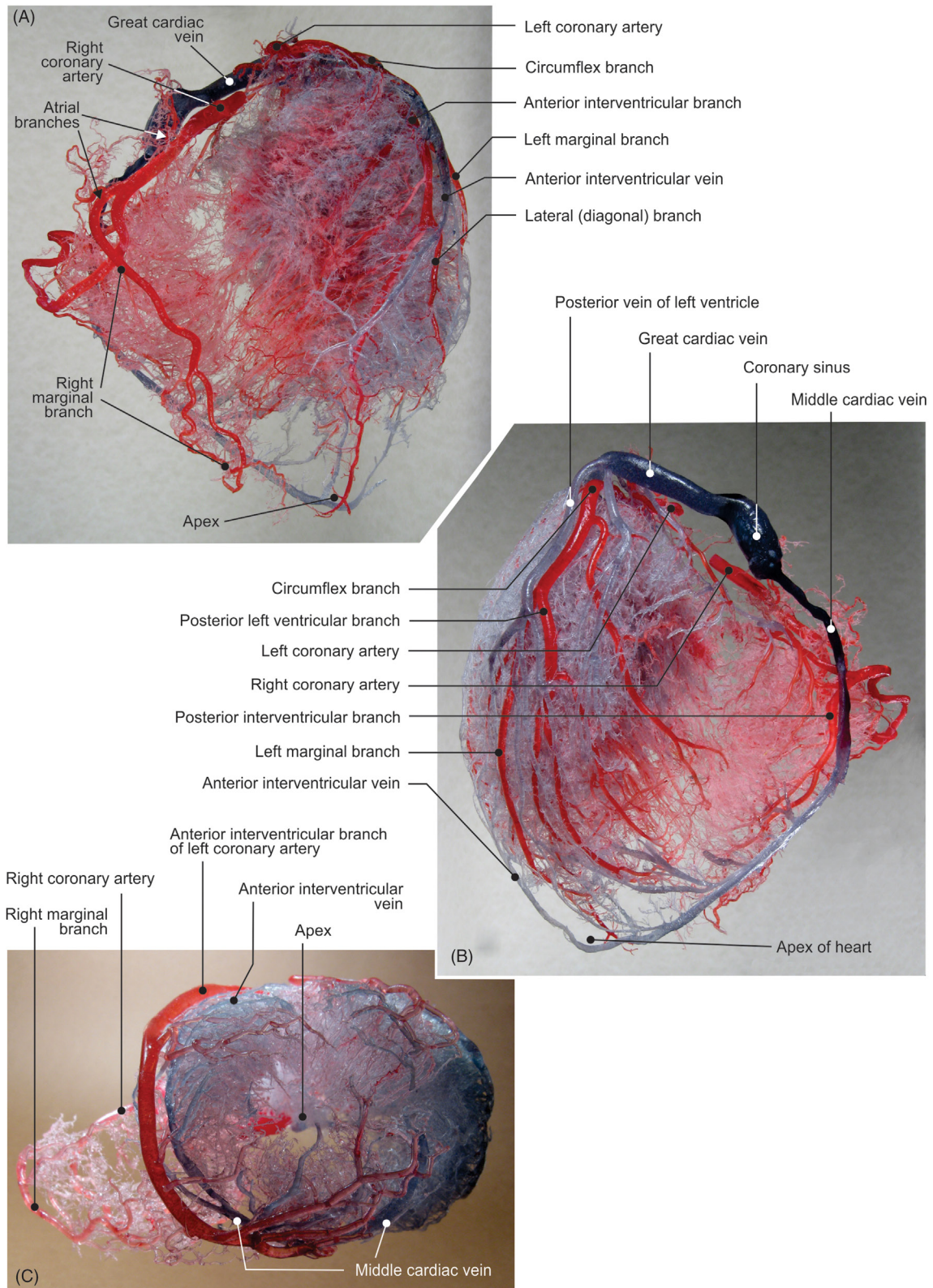


FIGURE 3.23 Cardiac arterial and venous distributions (corrosion cast). (A) Sternocostal surface. (B) Diaphragmatic surface (adjusted tip of circulation). (C) Inferior view of the cardiac apex.

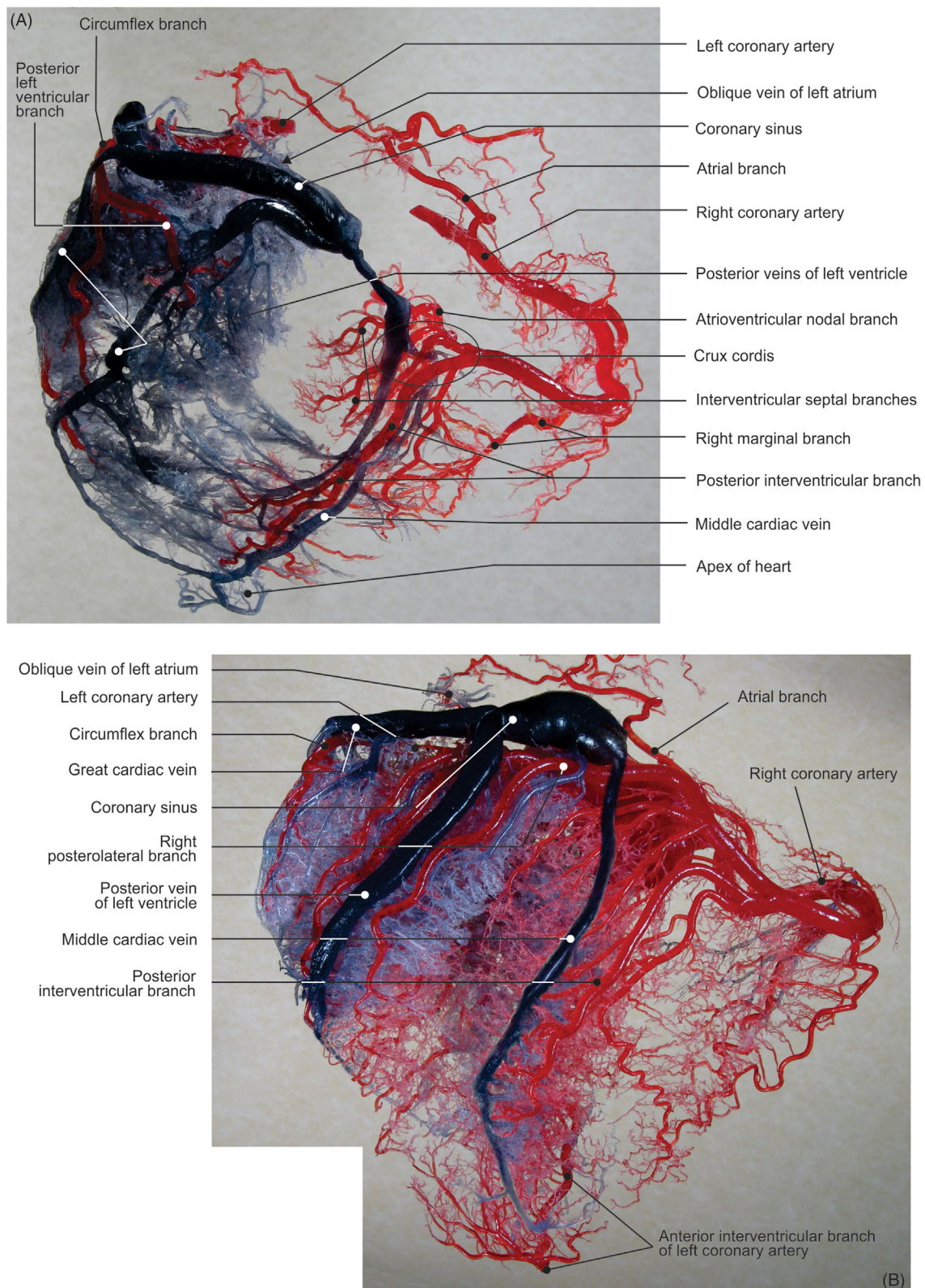


FIGURE 3.24 Cardiac arterial and venous distributions (diaphragmatic surfaces of corrosion casts). (A) Adjusted tip of circulation and (B) dominant right coronary artery (specimen from Fig. 3.16).

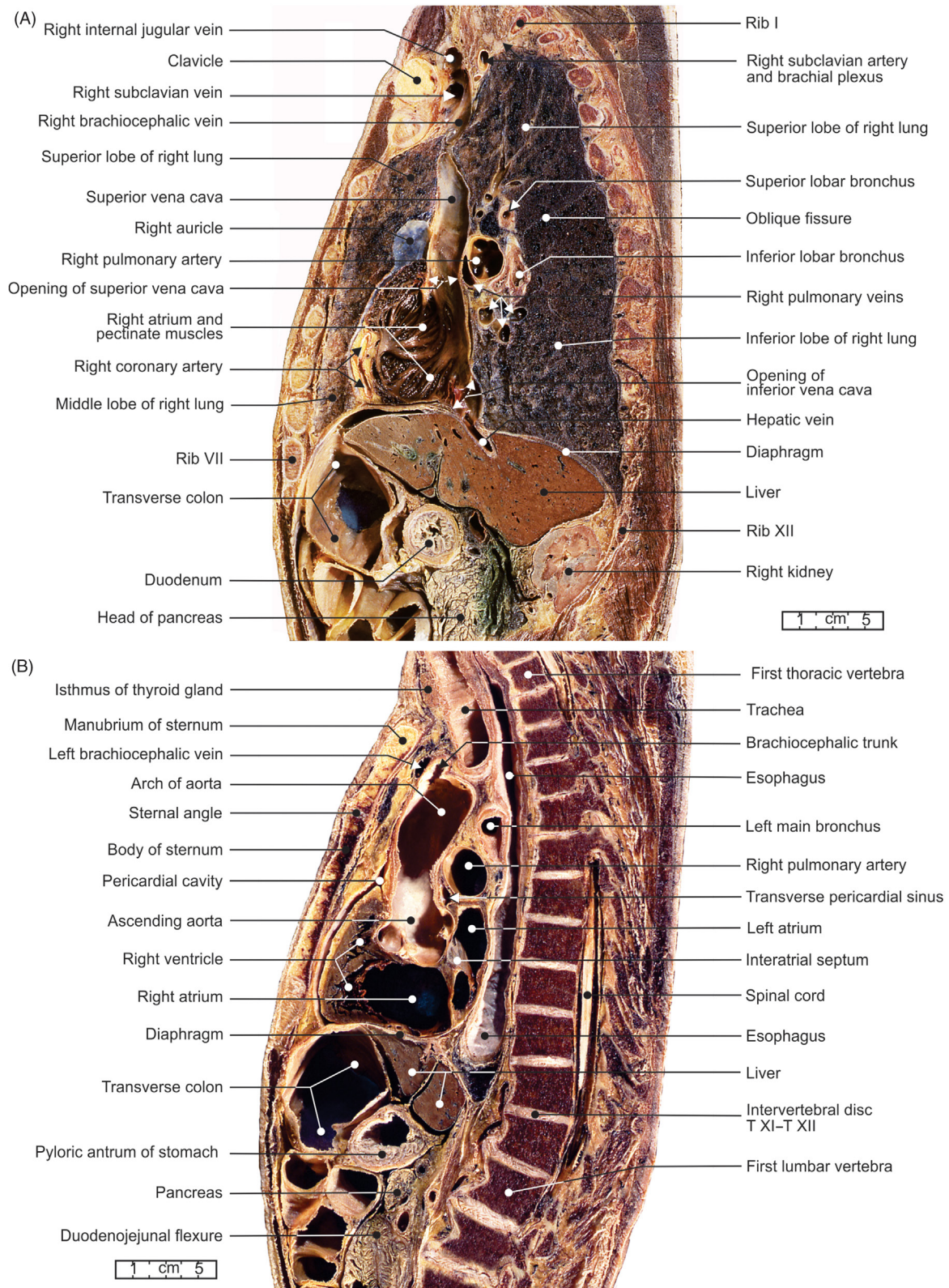


FIGURE 3.25 Sagittal sections of the thorax. Right (A) atrium and (B) ventricle of the heart.

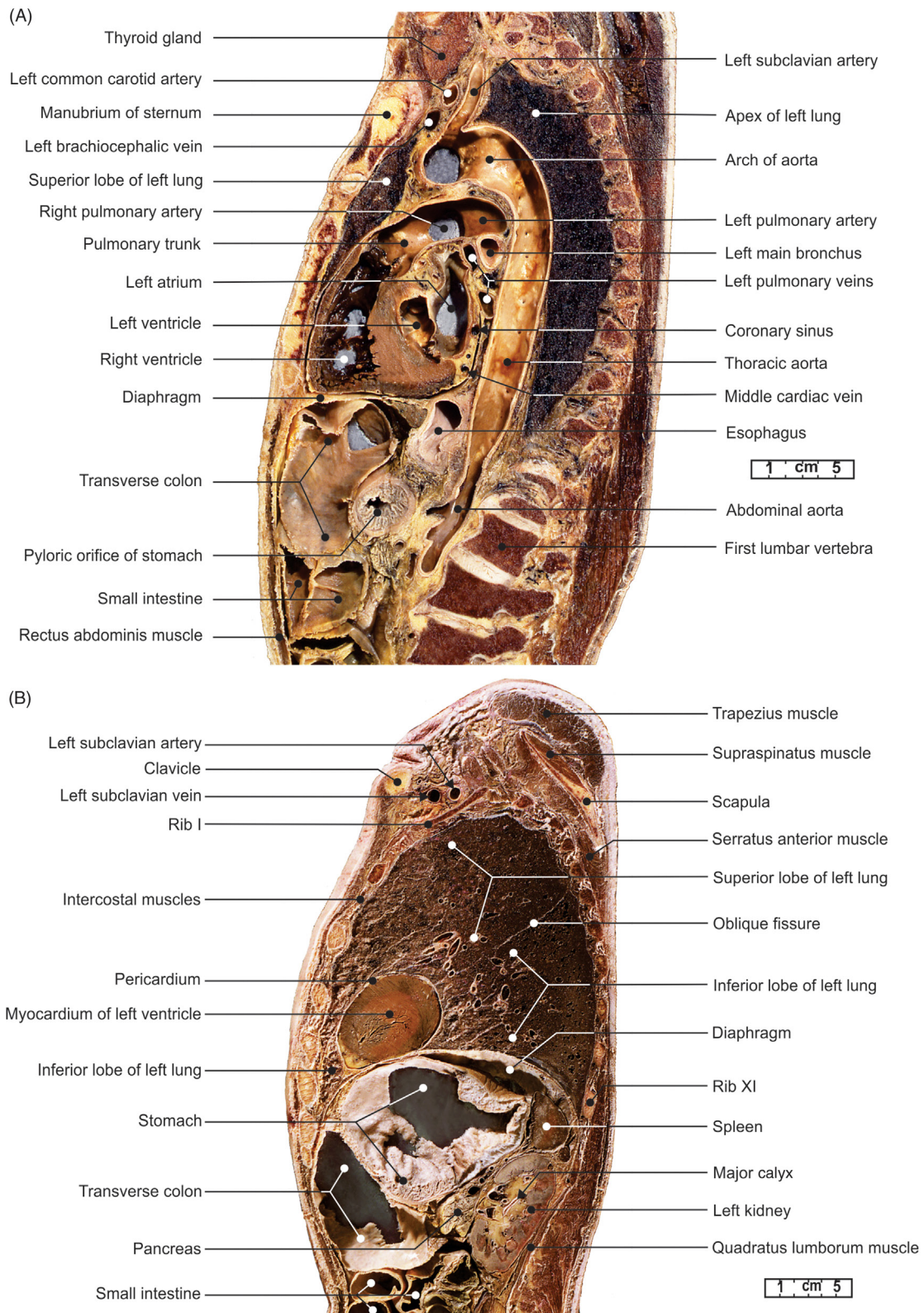


FIGURE 3.26 Sagittal sections of the thorax. (A) Both ventricles and (B) apex of the heart.

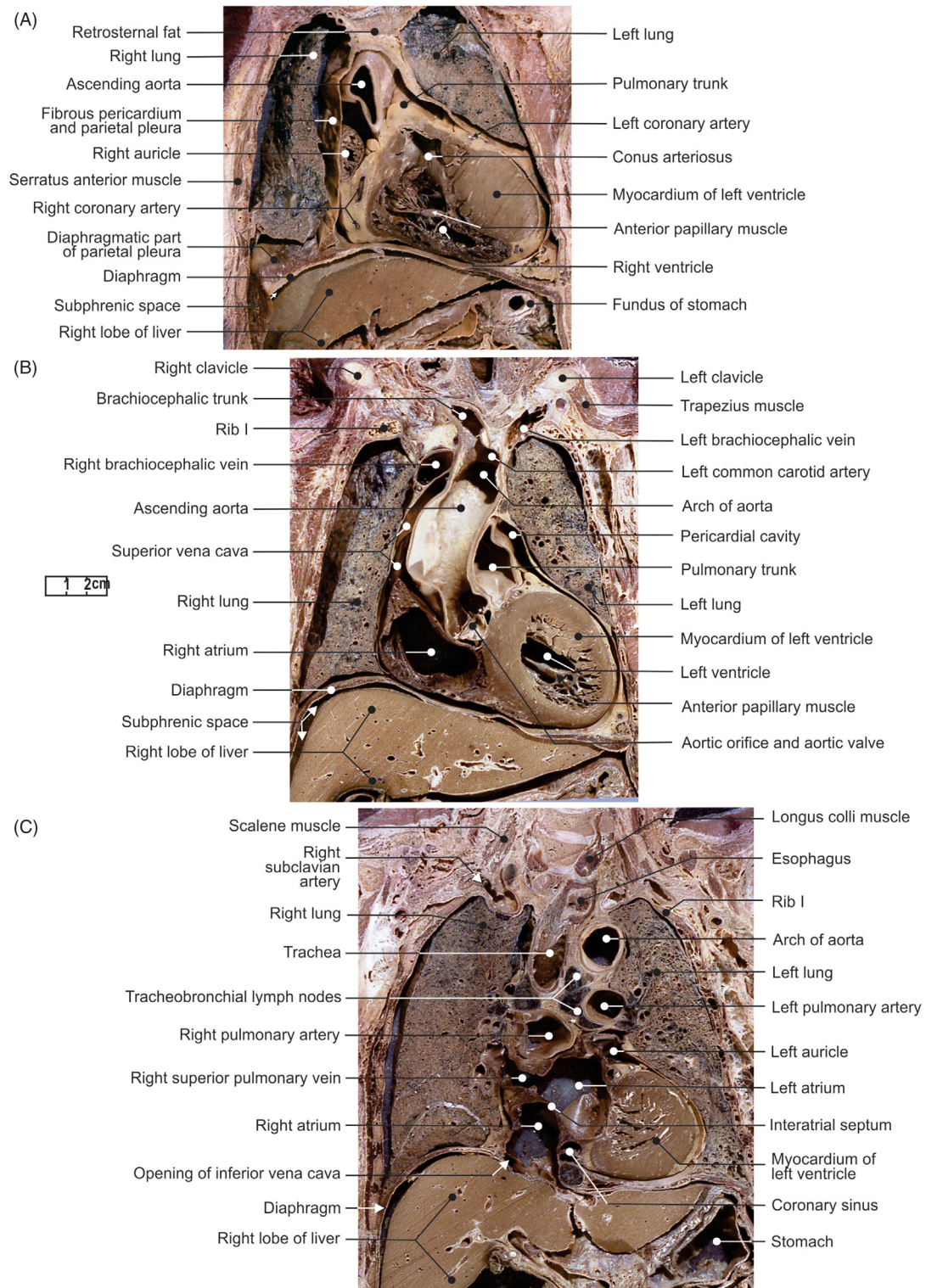
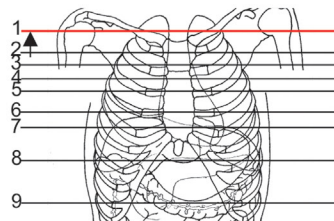


FIGURE 3.27 Coronal sections of the thorax. (A) Right ventricle, (B) left ventricle, and (C) left atrium.

(A)



(B)

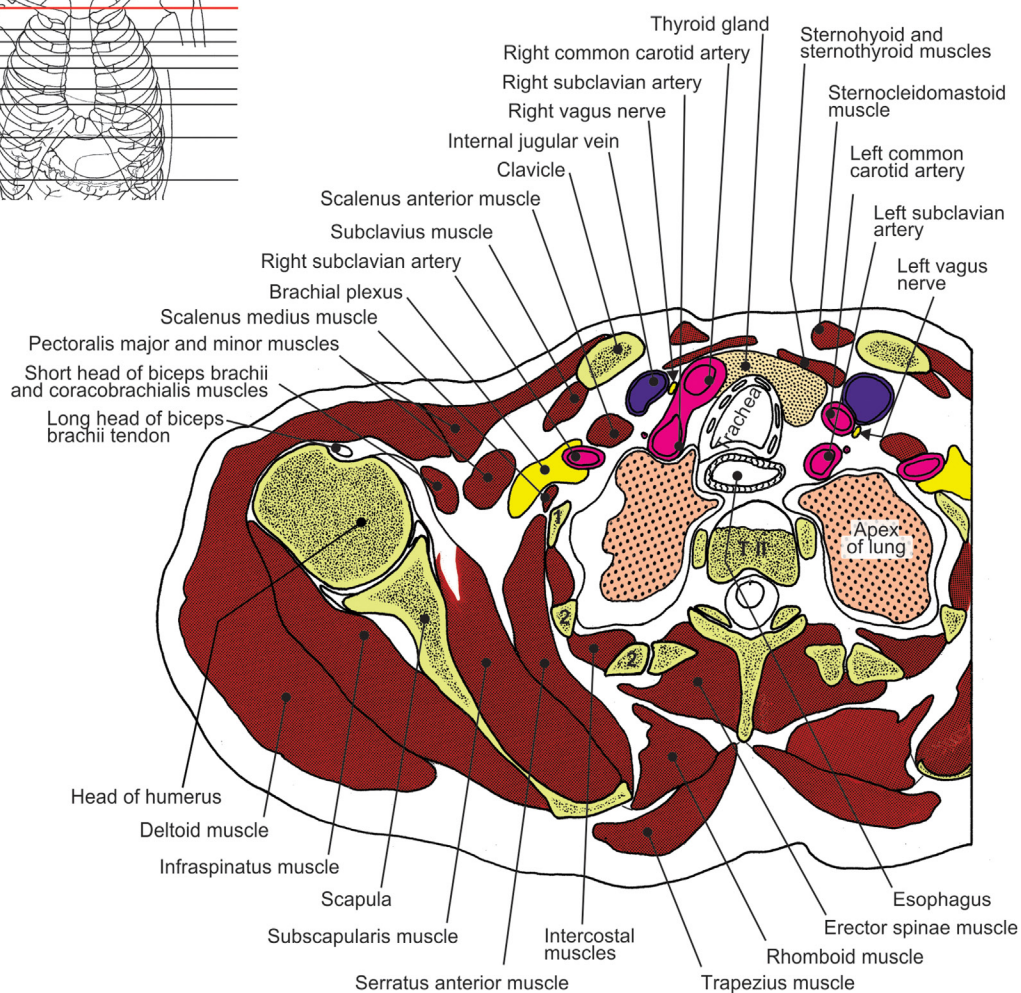


FIGURE 3.28 Cross-section of the thorax at the T2 vertebral level. (A) Section and (B) illustration.

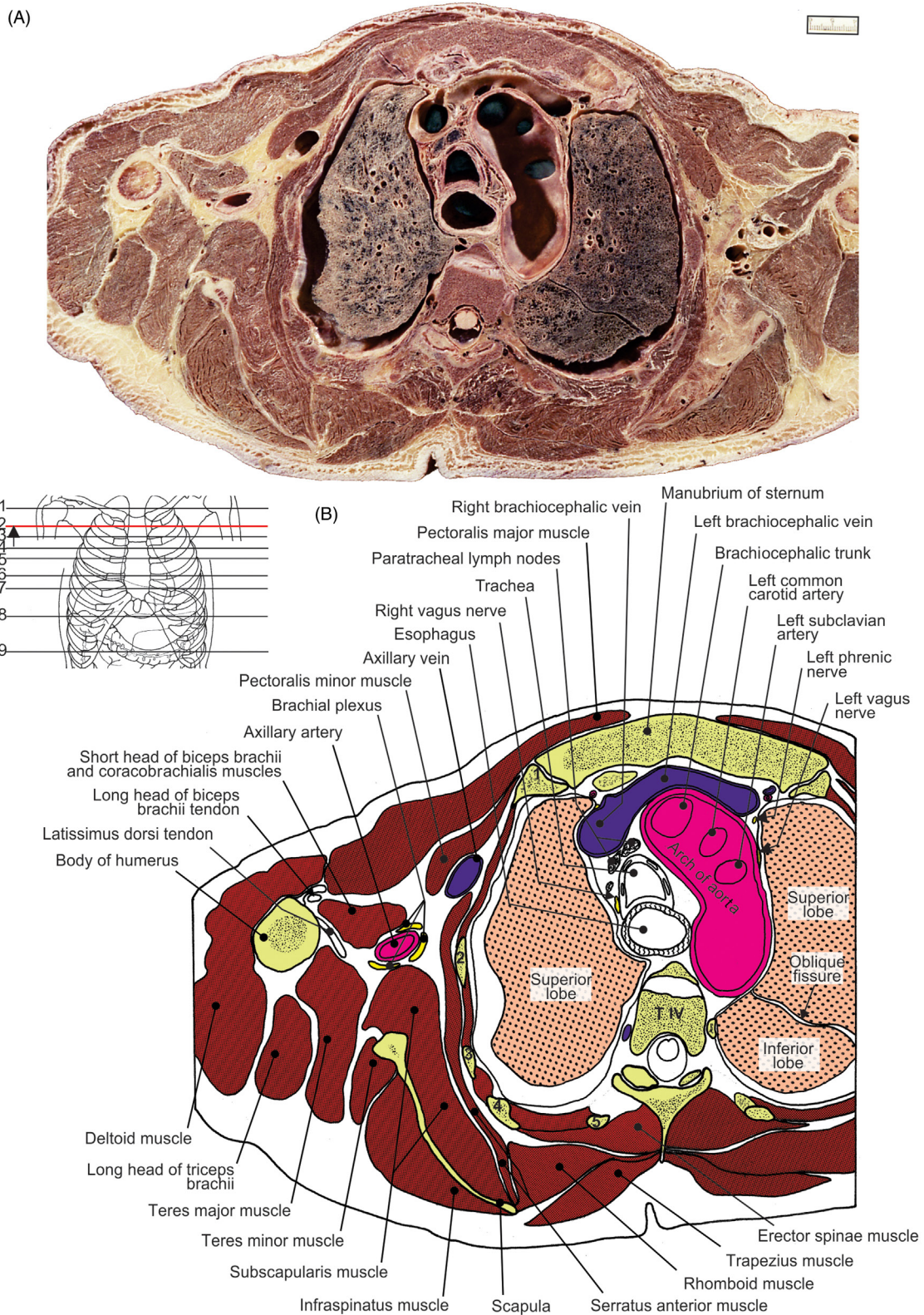
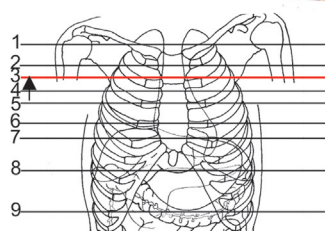
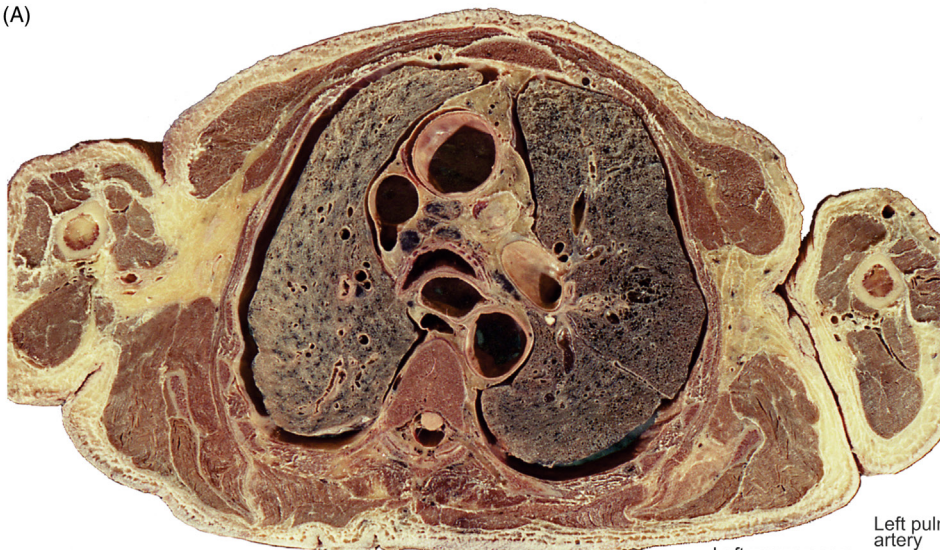


FIGURE 3.29 Cross-section of the thorax at the T4 vertebral level. (A) Section and (B) illustration.

(A)



(B)

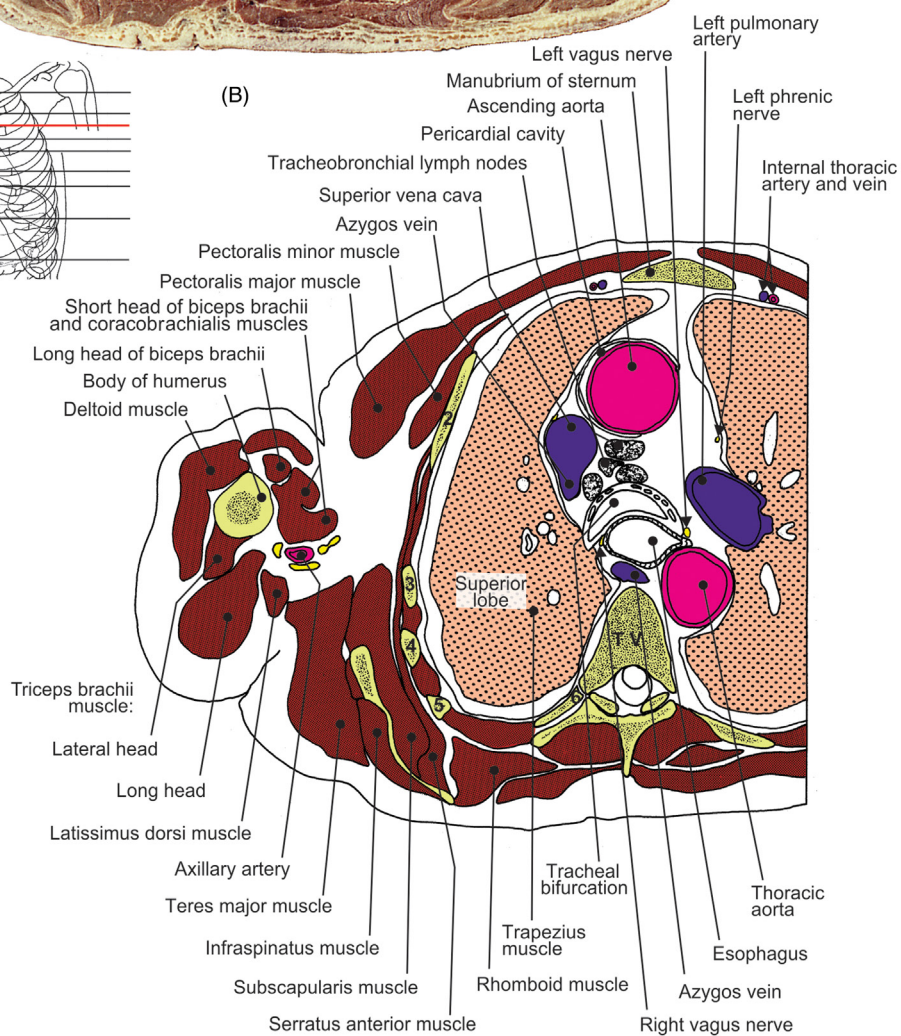
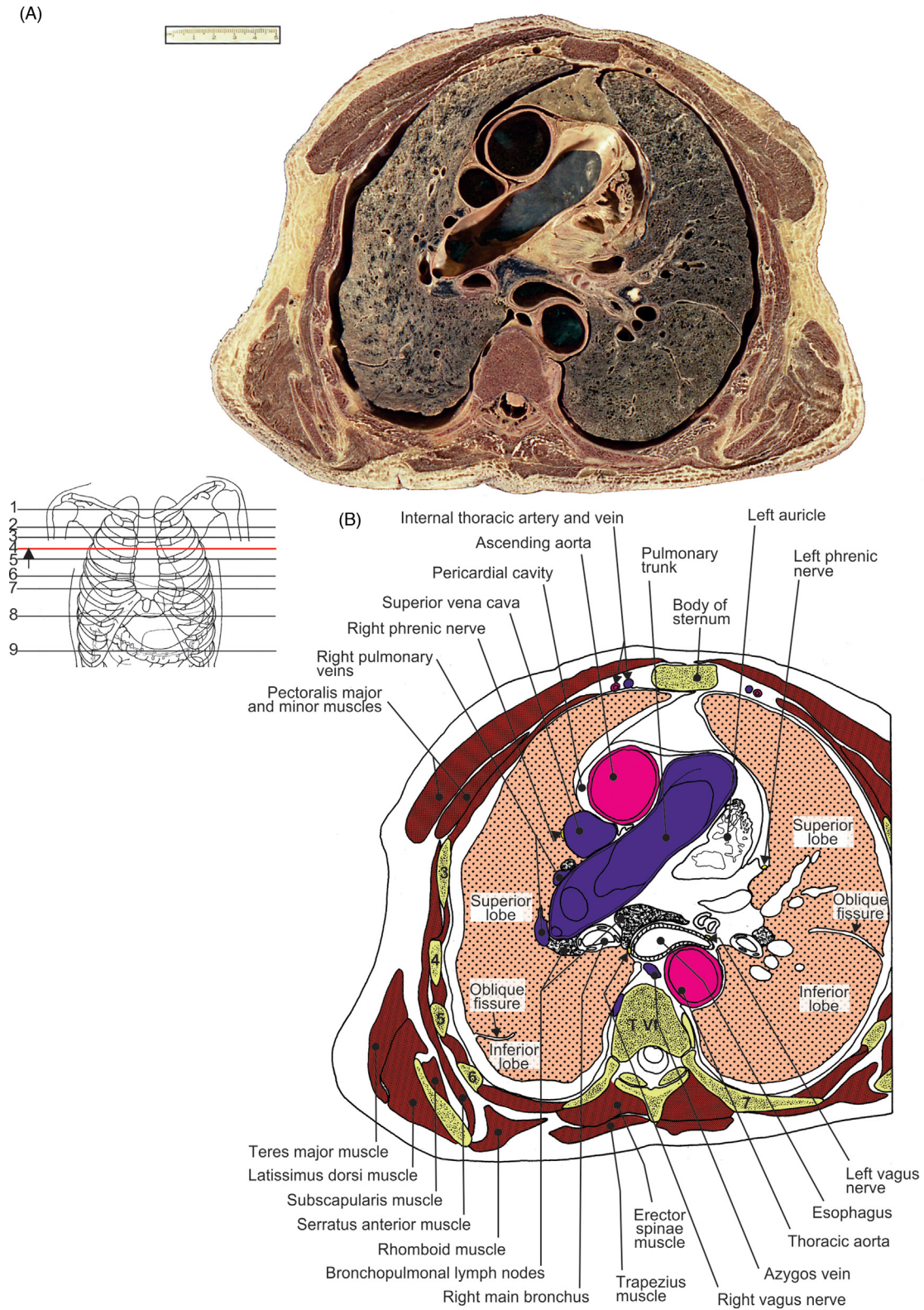
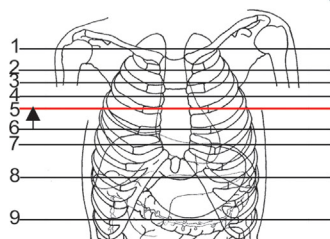
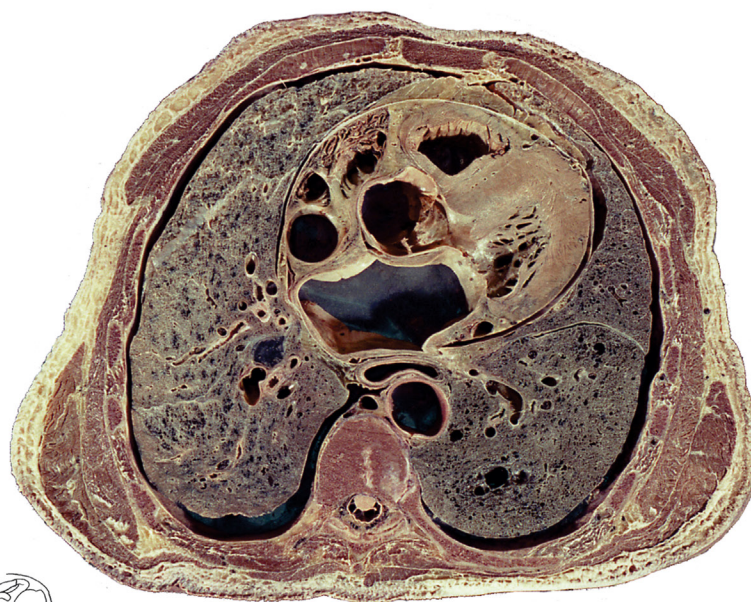


FIGURE 3.30 Cross-section of the thorax at the T5 vertebral level. (A) Section and (B) illustration.



(A)



(B)

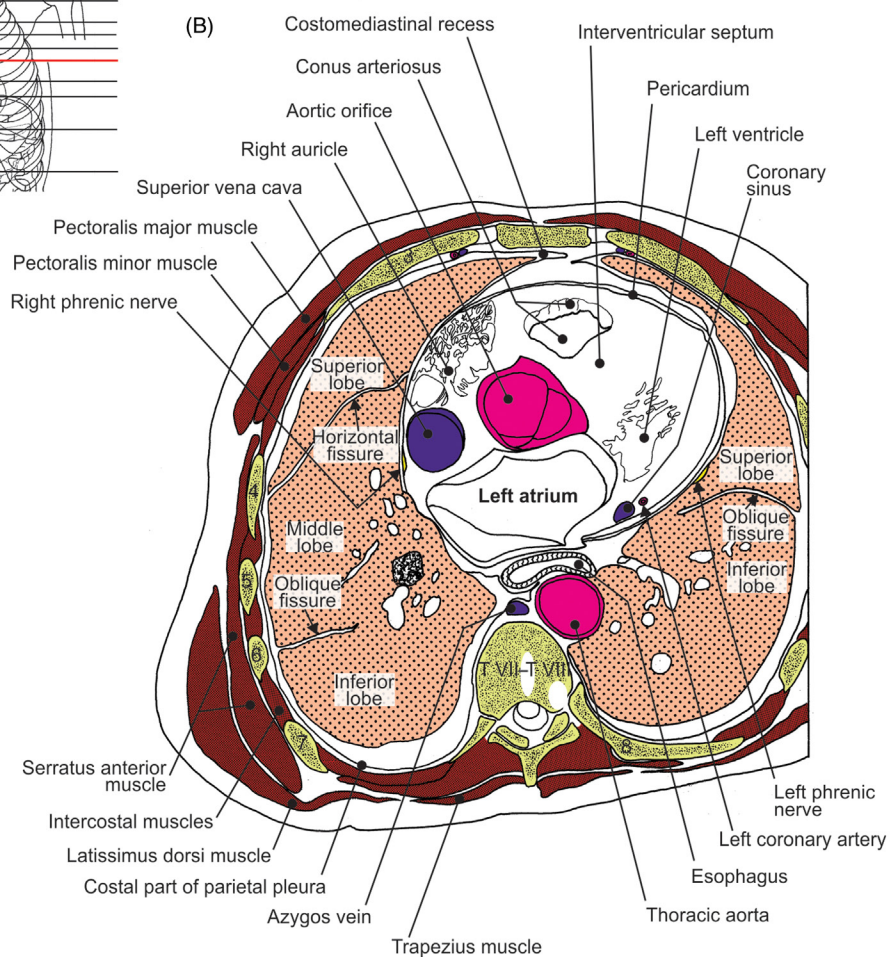
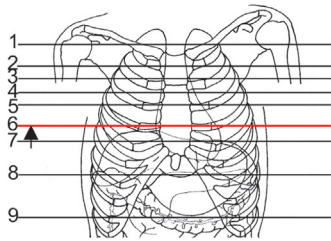
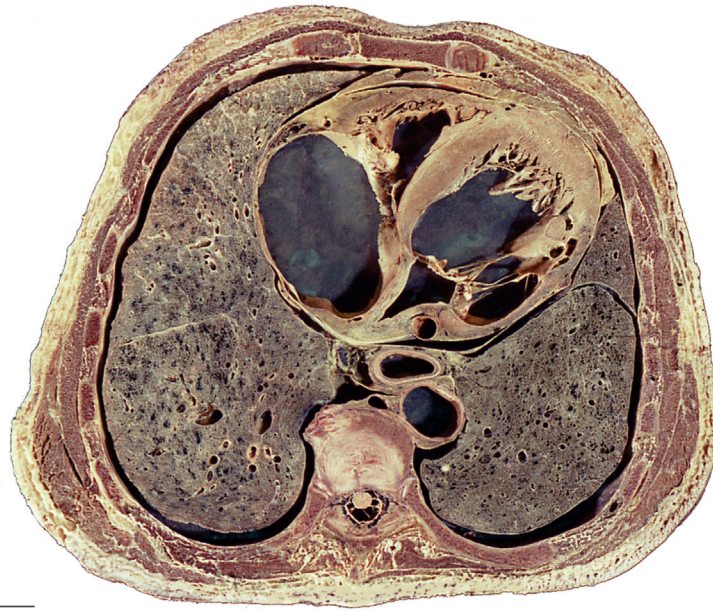


FIGURE 3.32 Cross-section of the thorax at the T7–T8 vertebral level. (A) Section and (B) illustration.

(A)



(B)

Cross section of thorax at T8-T9 vertebral level.

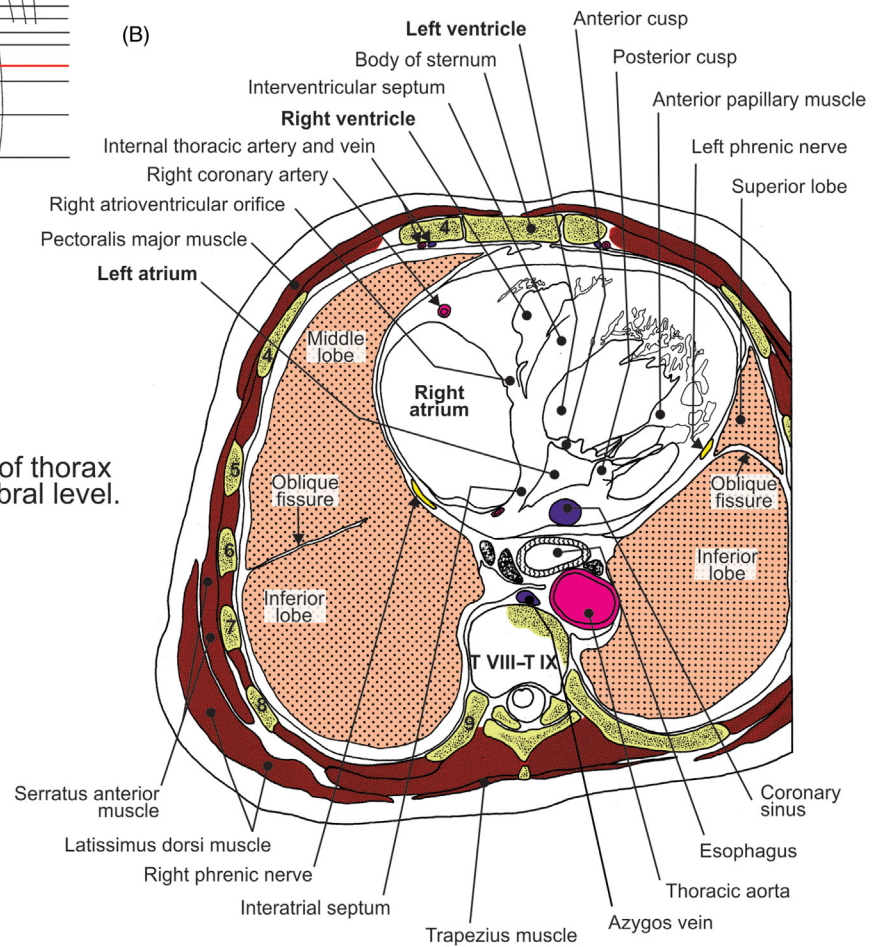


FIGURE 3.33 Cross-section of the thorax at the T8-T9 vertebral level. (A) Section and (B) illustration.

(A)

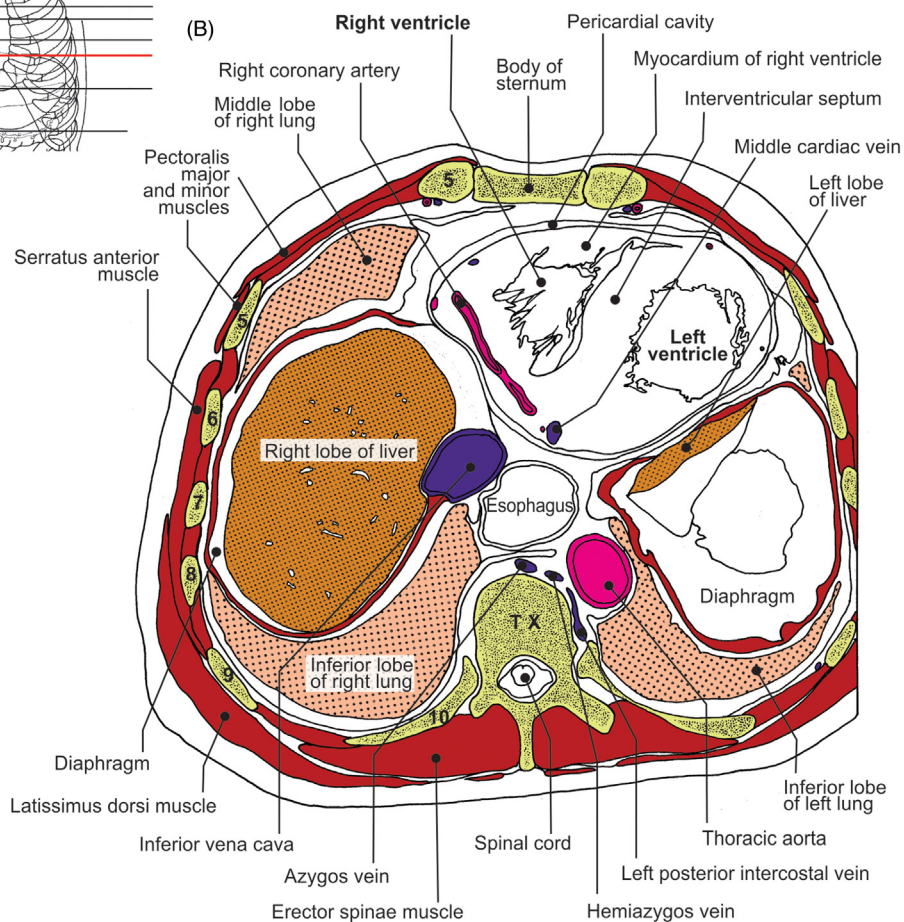
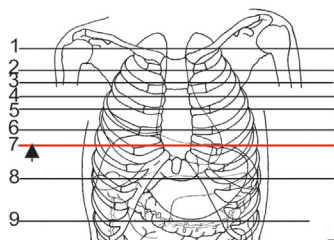
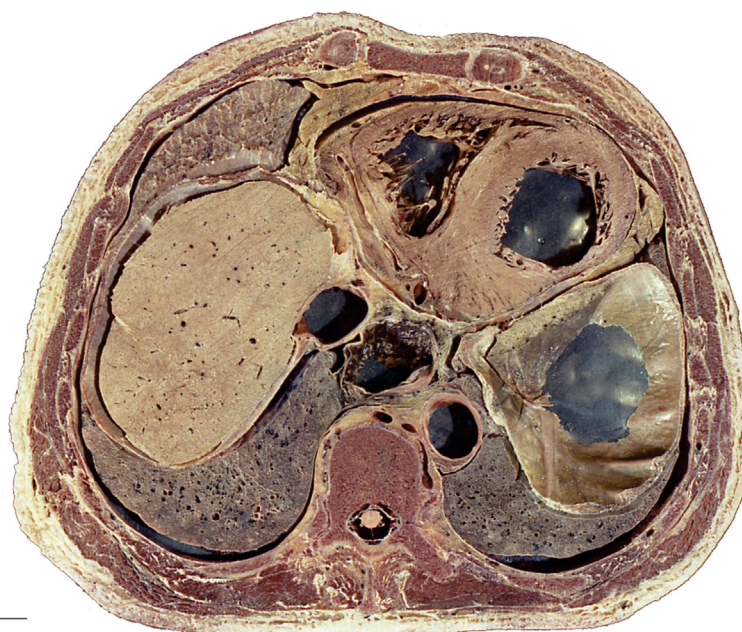


FIGURE 3.34 Cross-section of the thorax at the T10 vertebral level. (A) Section and (B) illustration.

Chapter 4

Abdomen and Vascularization

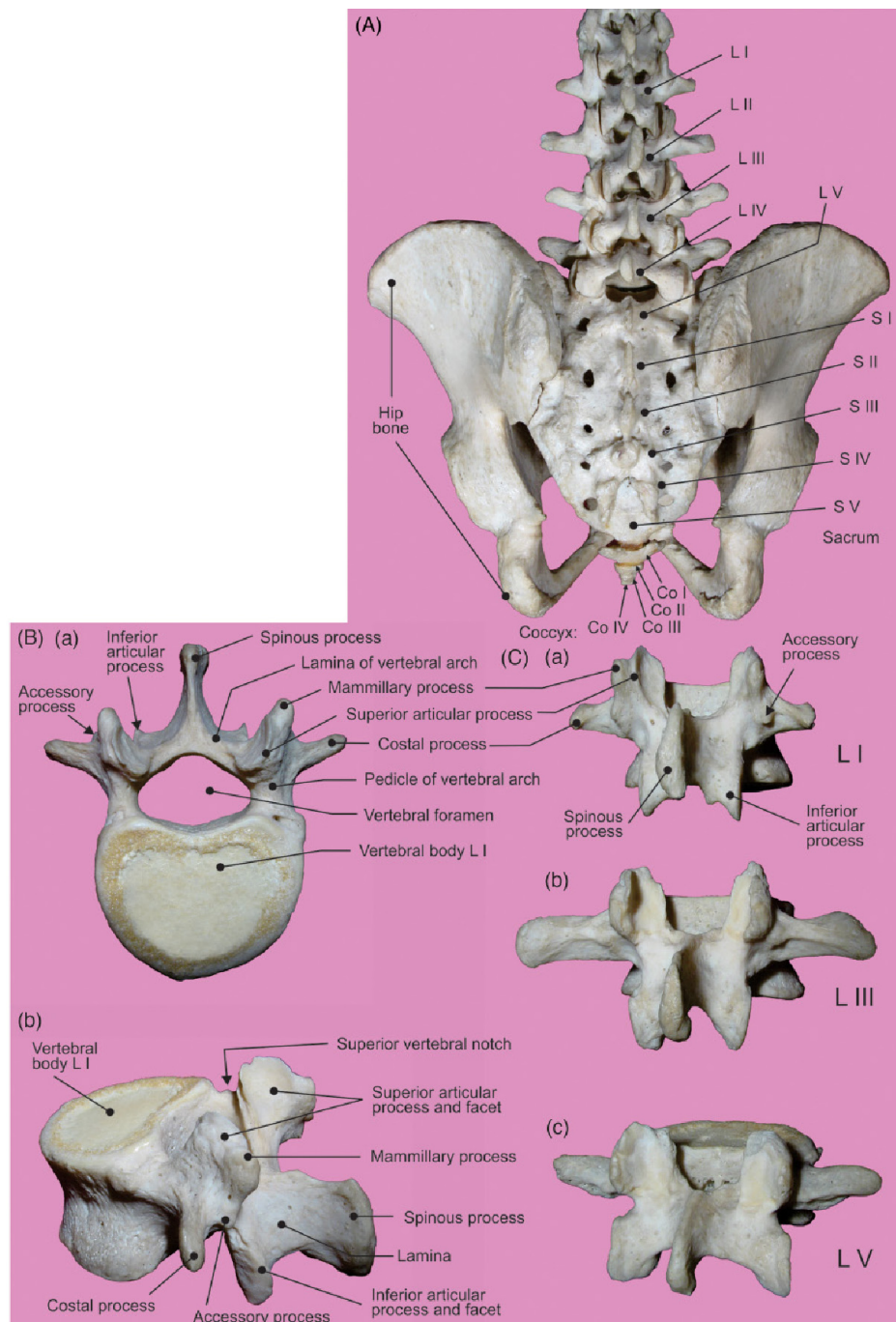


FIGURE 4.1 (A) Lumbar and sacral segments of the vertebral column: posterior view; total fusion of L5 vertebra with sacrum. (B) Vertebra L1: (a) superior and (b) lateral views. (C) Vertebrae posterior view: (a) L1, (b) L3, and (c) L5.

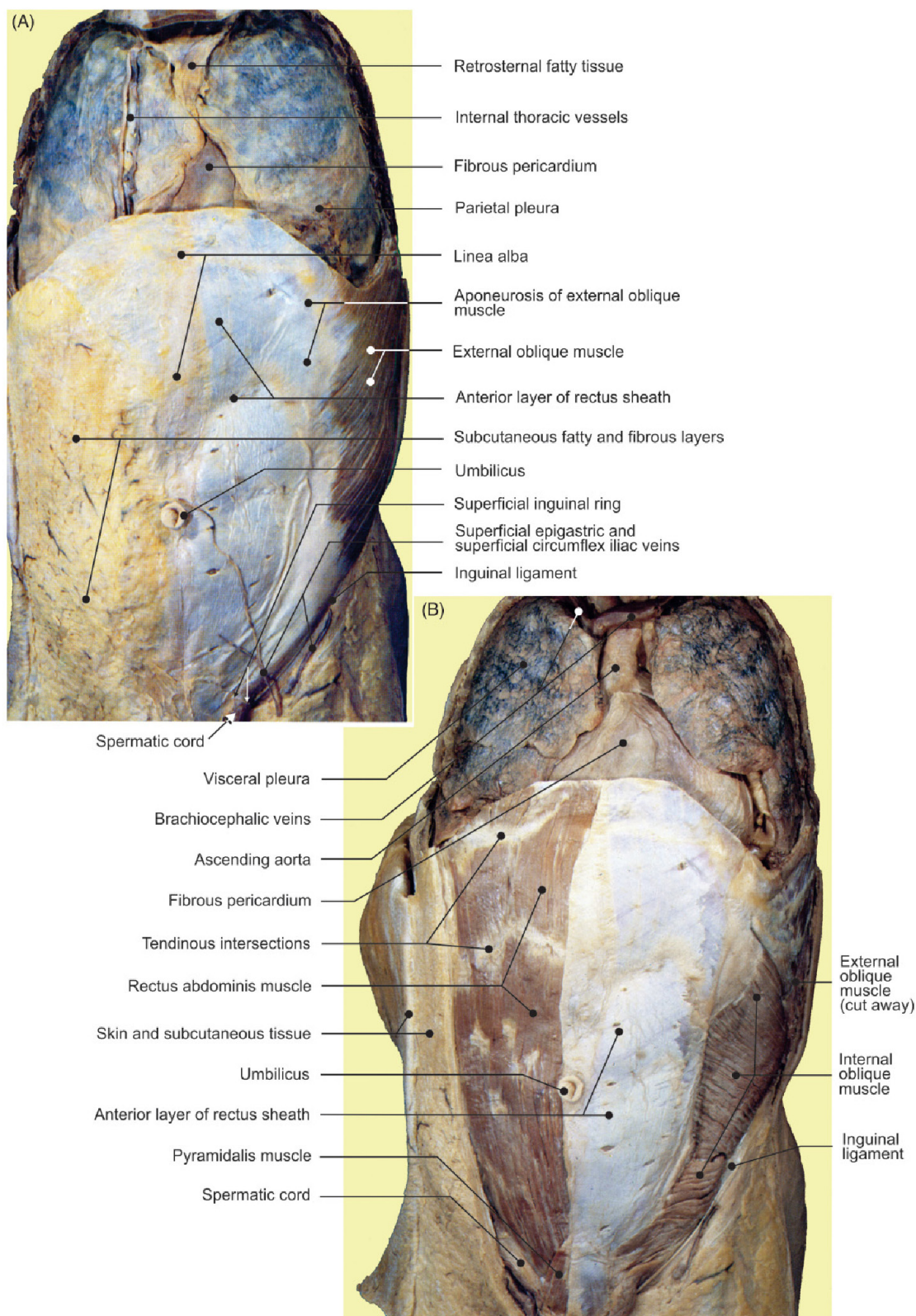


FIGURE 4.2 The anterolateral abdominal wall. (A) Superficial and (B) middle layers.

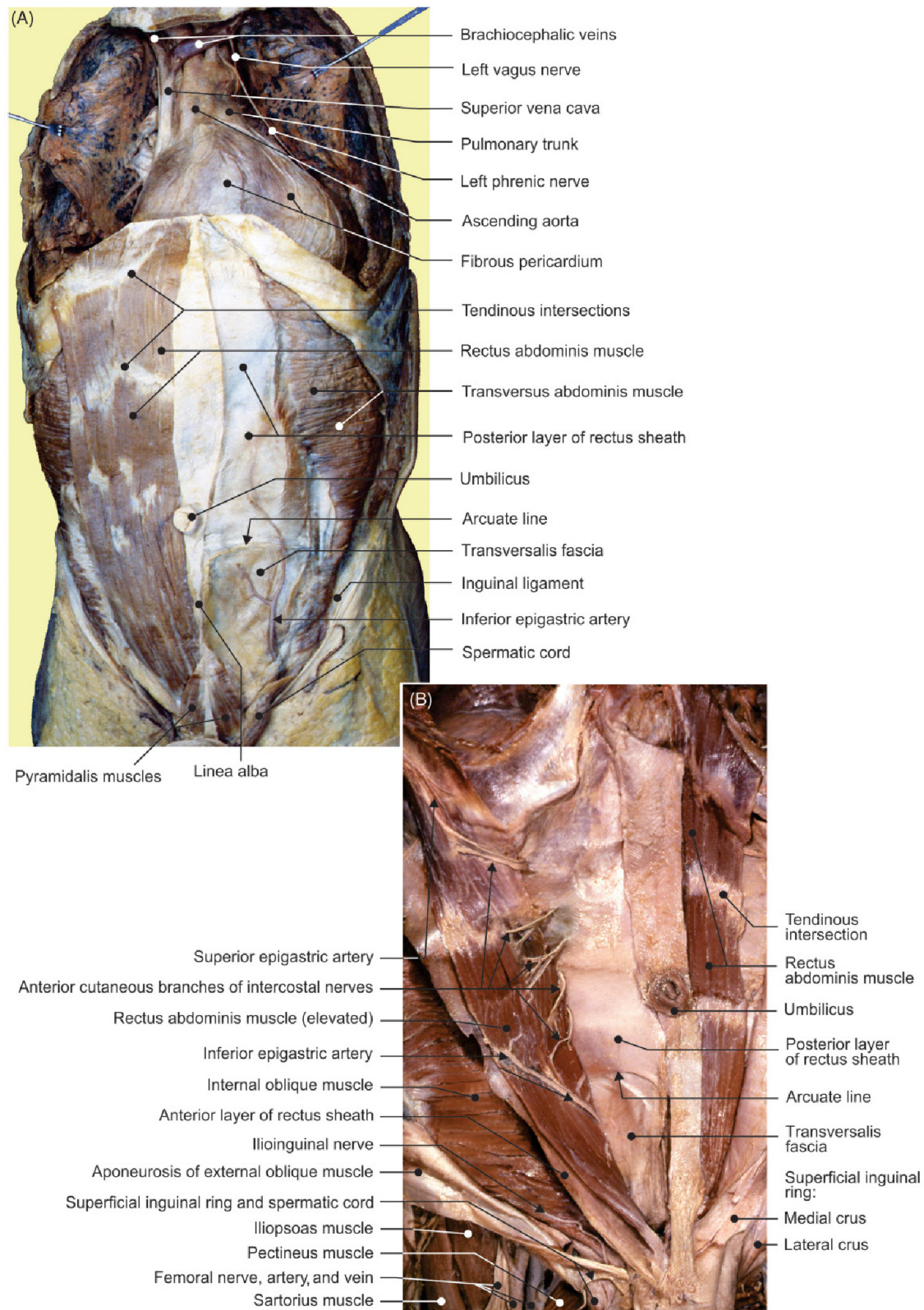


FIGURE 4.3 The anterolateral abdominal wall. (A) Deep layer and (B) structural details.

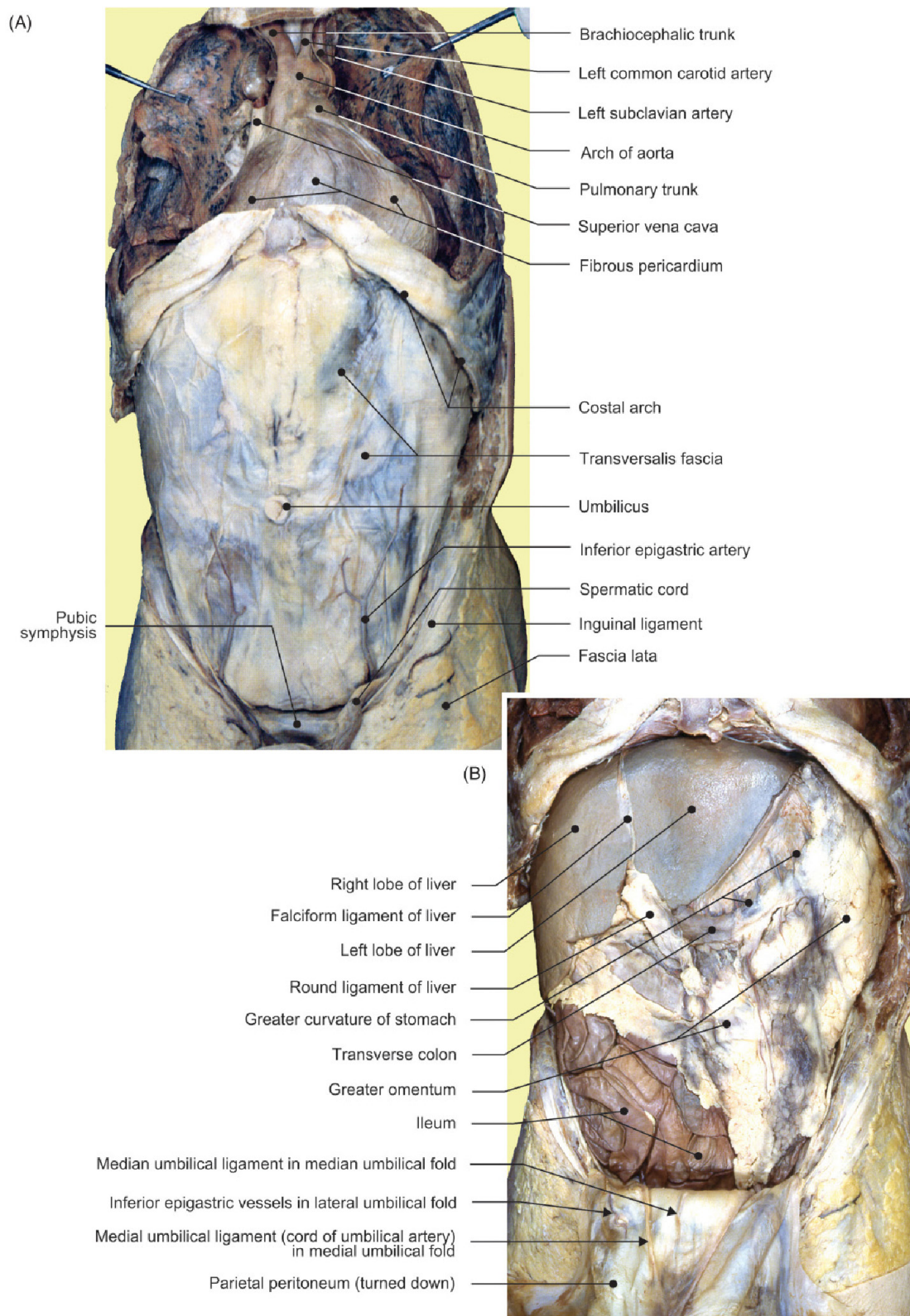


FIGURE 4.4 The anterolateral abdominal wall. (A) Transversalis fascia and (B) exposed anterior aspect of the abdominal content in situ.

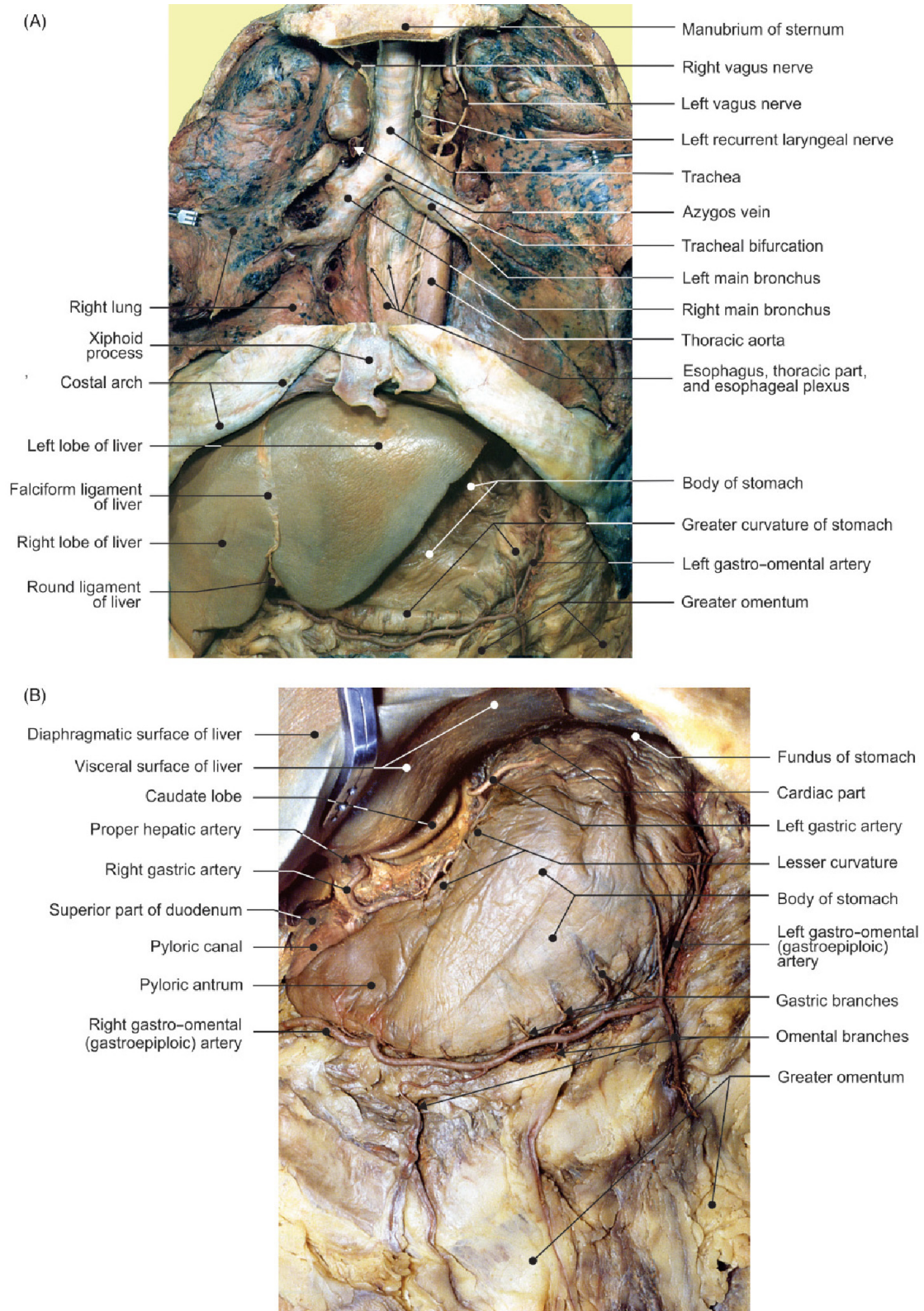


FIGURE 4.5 The stomach in situ. (A–B) Different views displaying relationships and blood vessels.

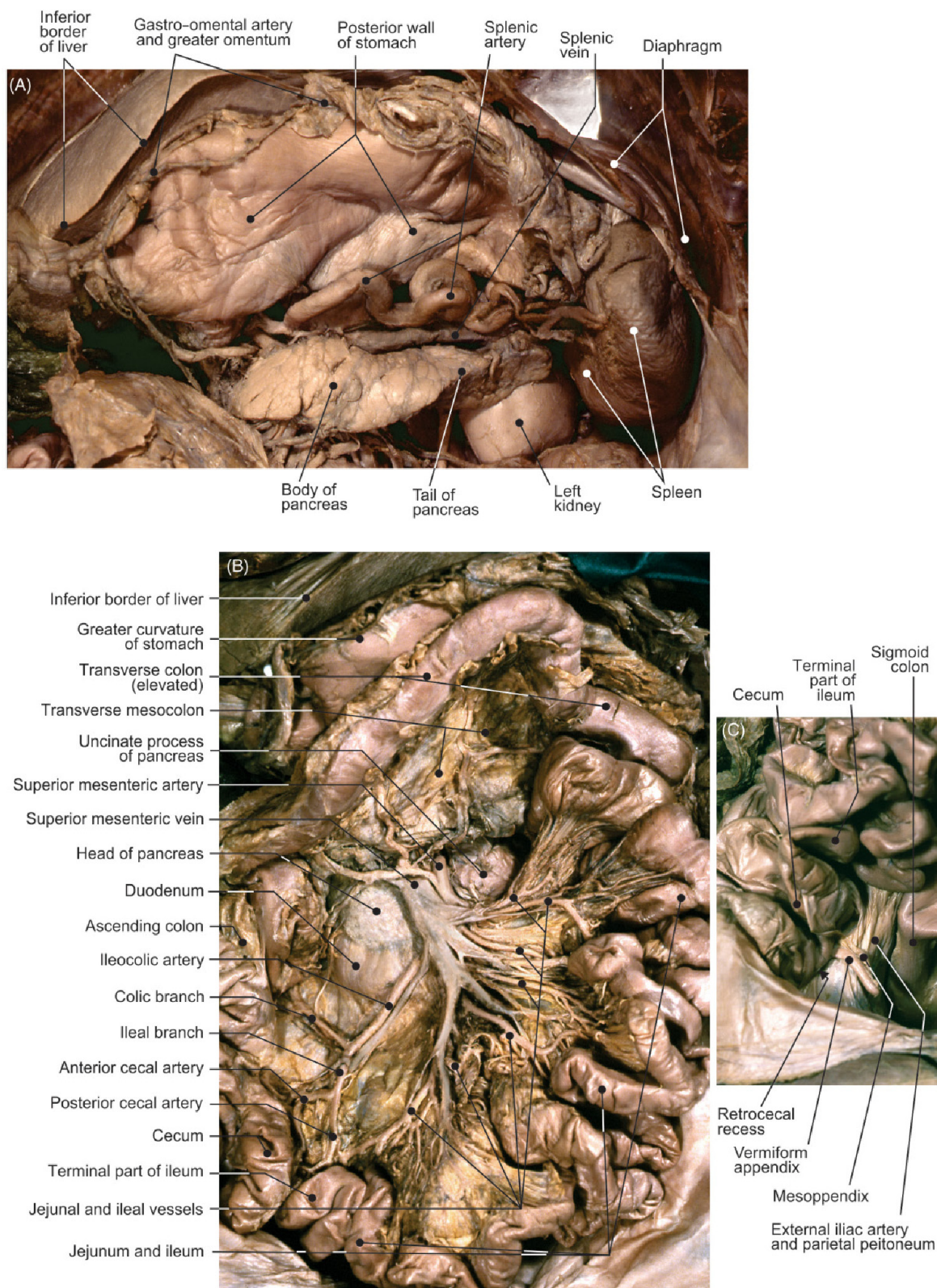


FIGURE 4.6 Abdominal viscera and vascularization. (A) Stomach reflected superiorly: exposed omental bursa. (B) Superior mesenteric artery and vein. (C) Appendix: relationships.

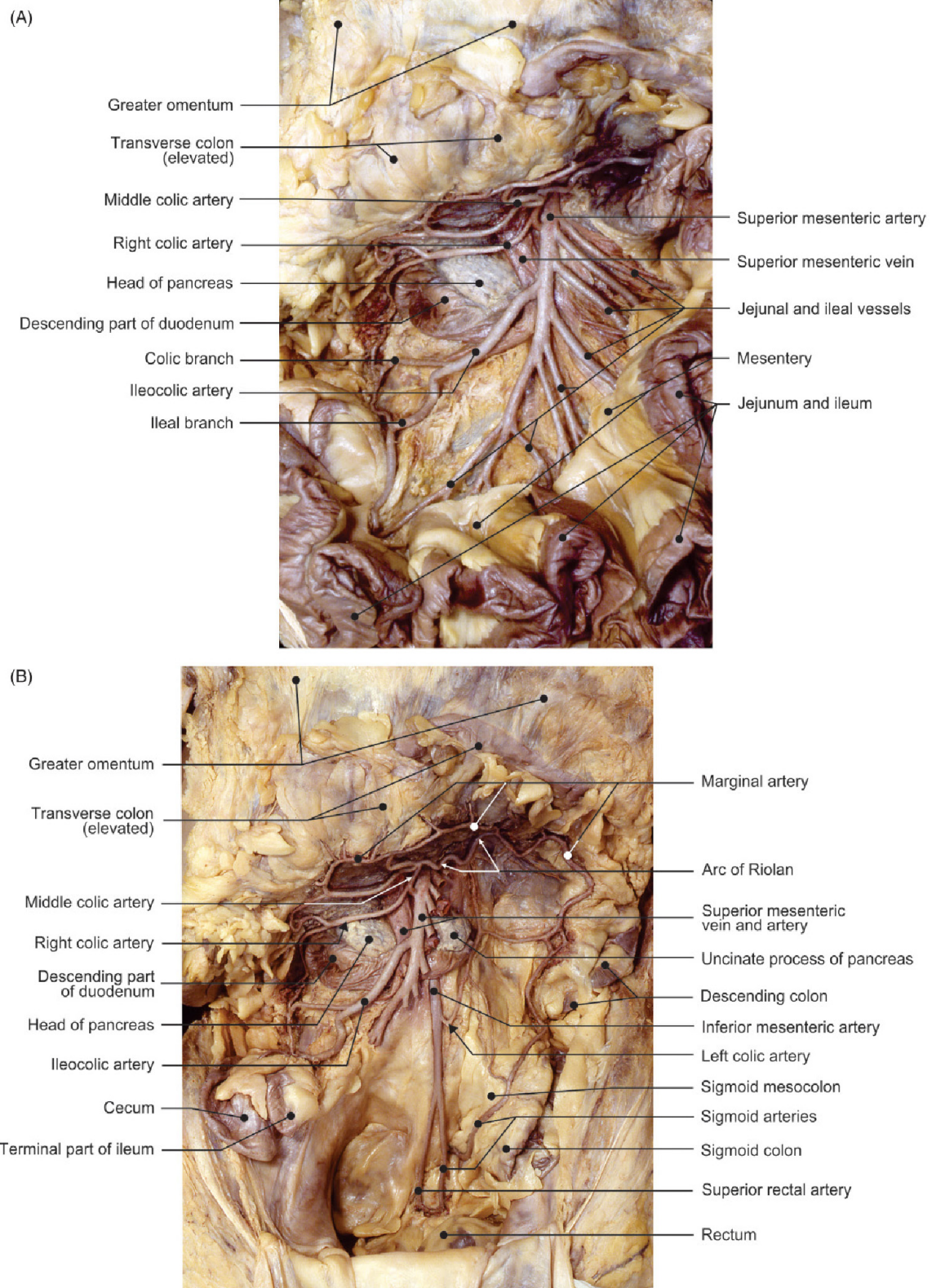


FIGURE 4.7 (A–B) Different views depicting the arterial supply of the small and large intestines.

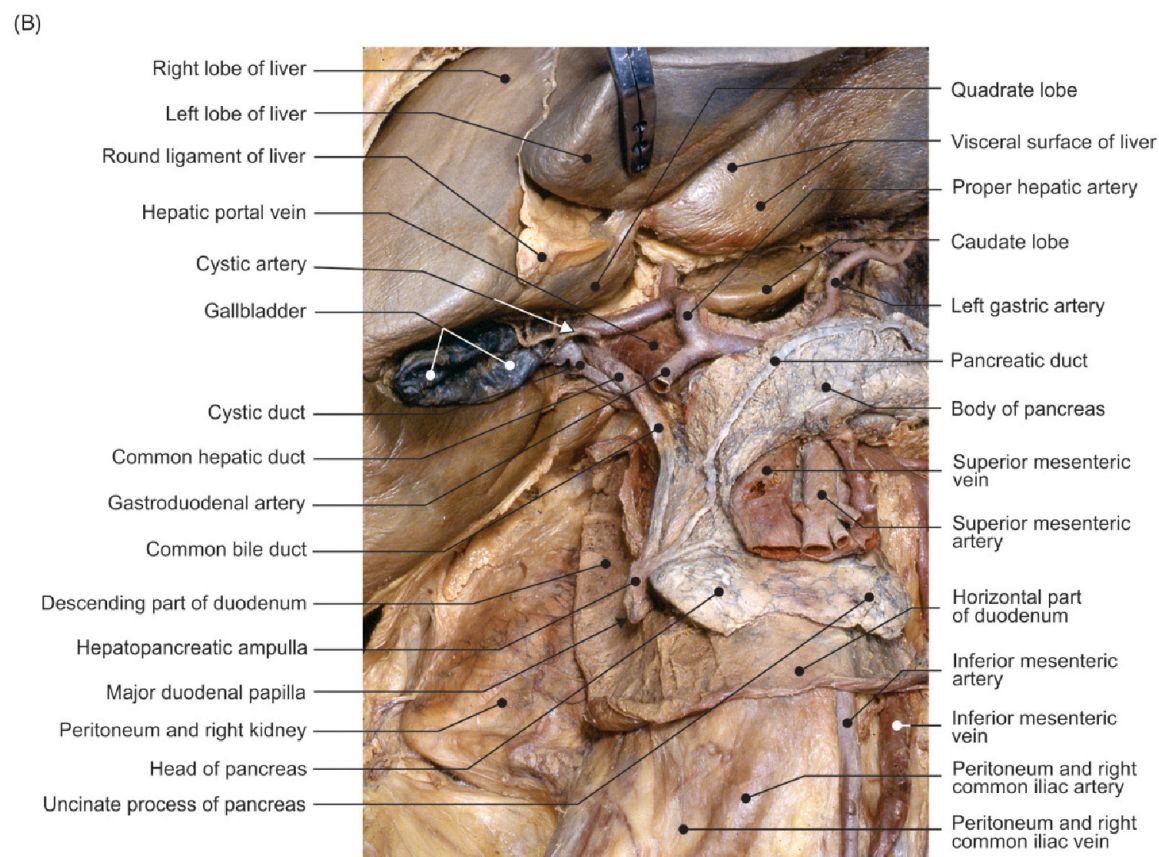
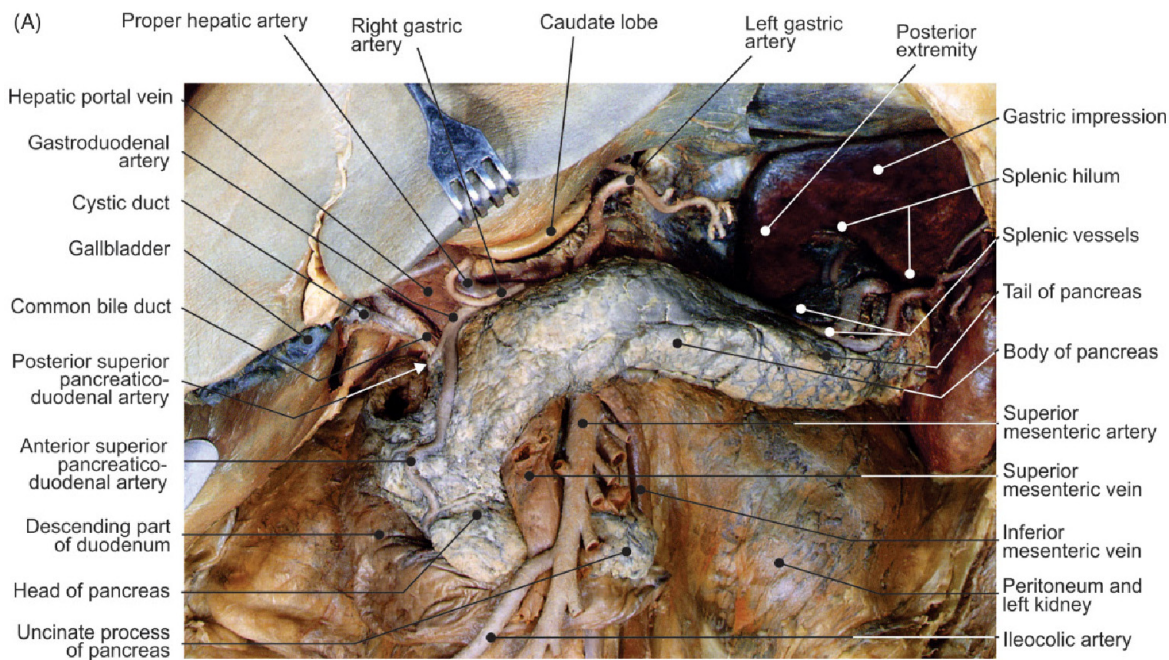


FIGURE 4.8 (A–B) Different views displaying the liver, pancreas, duodenum, and biliary structures in situ.

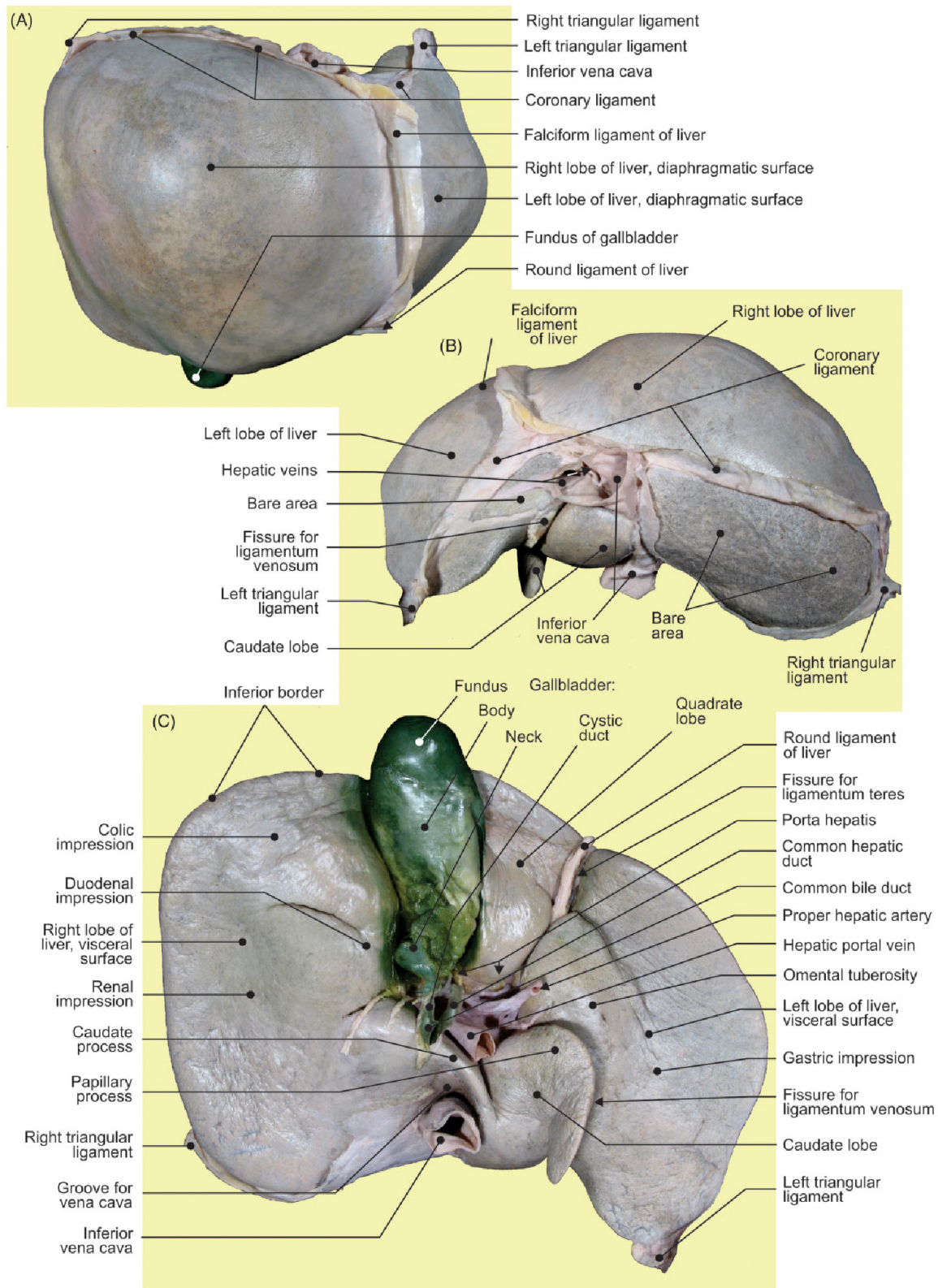


FIGURE 4.9 The liver. (A) Superior, (B) posterior, and (C) inferior aspects.

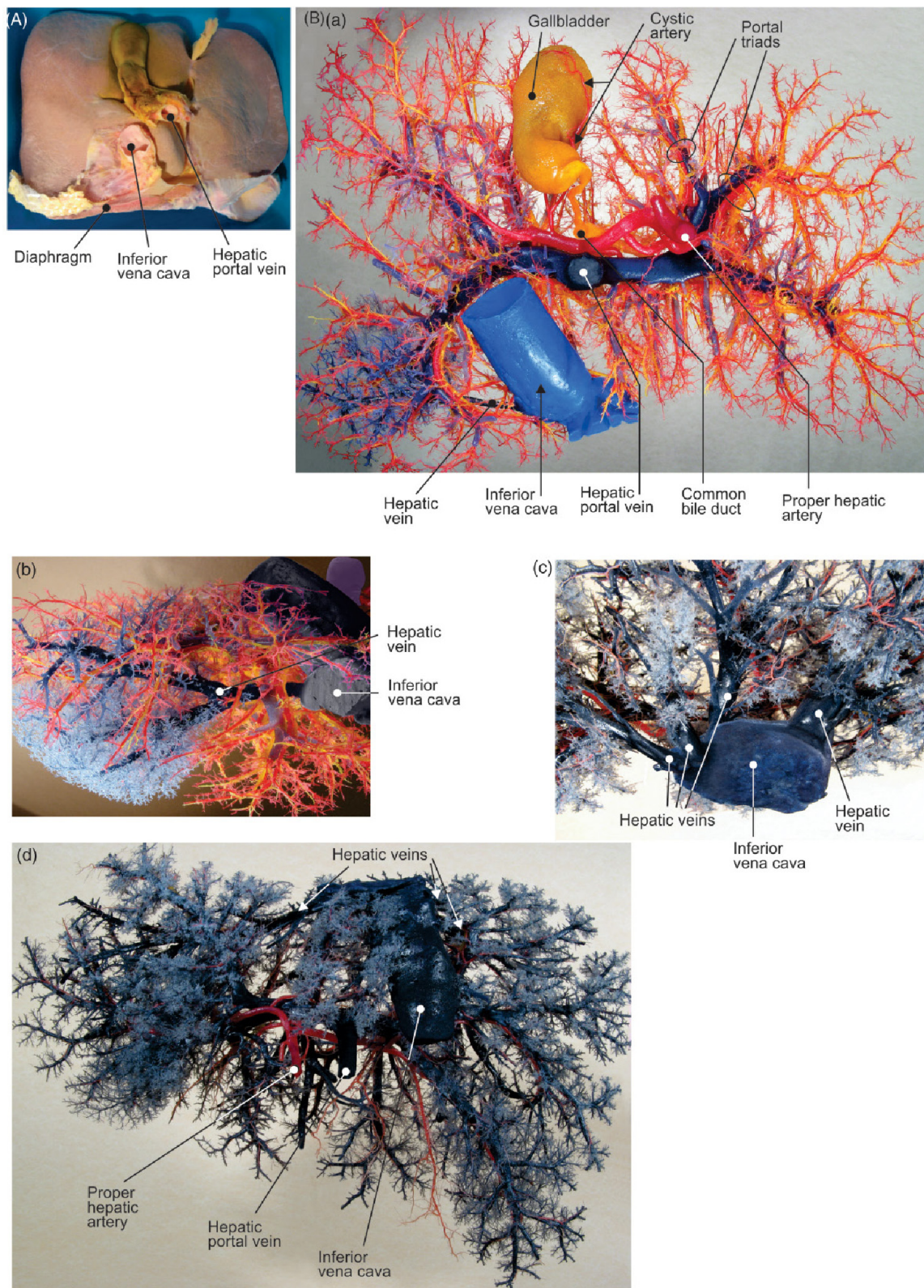


FIGURE 4.10 The liver. (A) Visceral surface of the native liver. (B) Blood circulation (corrosion casts): arborization of hepatic artery proper (*red*) following bile ducts (*yellow*), and branches of the portal vein (*blue*). (a) Inferior, (b) superior, (c) detailed superior, and (d) posterior views of the cast.

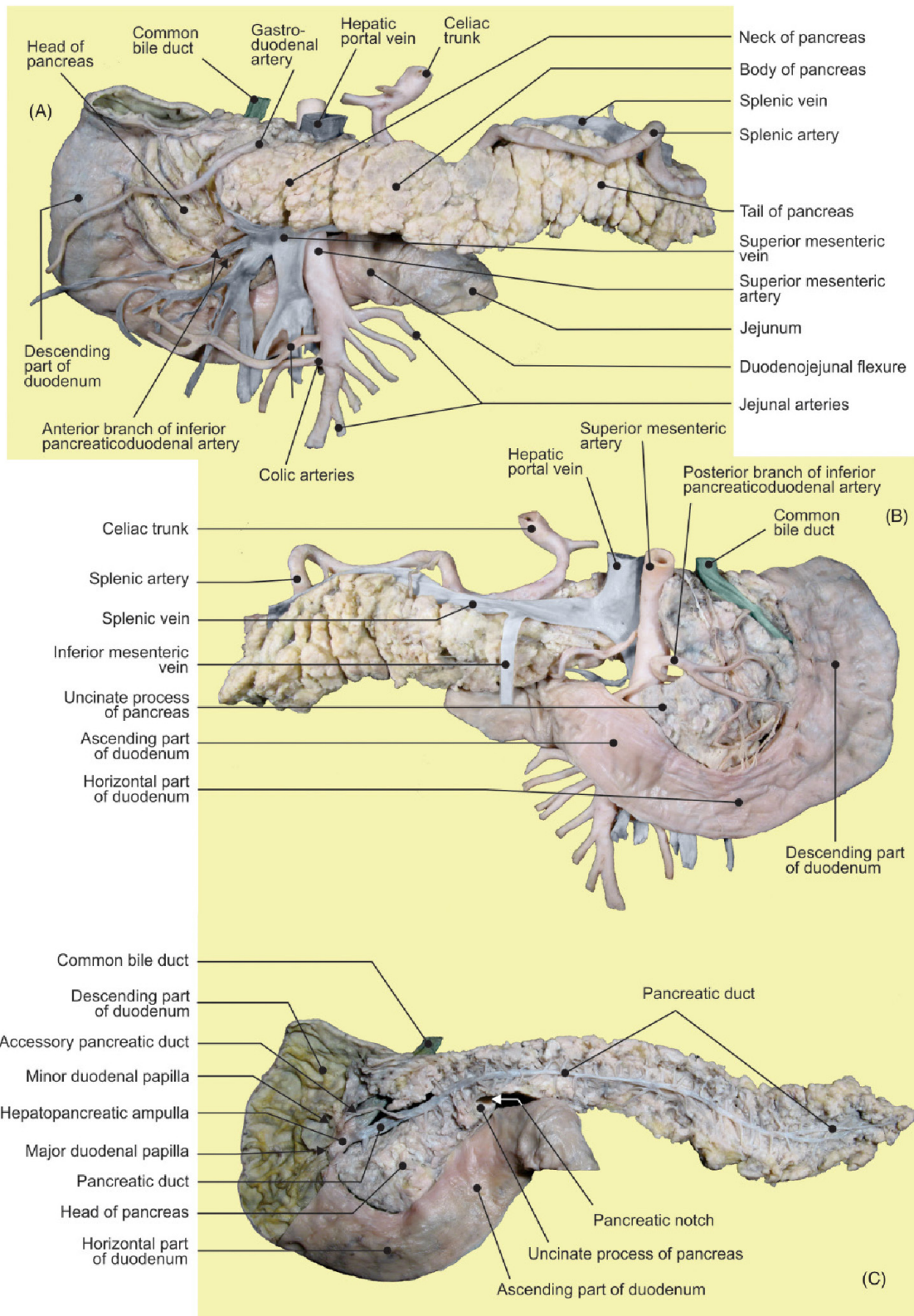


FIGURE 4.11 The duodenum and pancreas. (A) Anterior, (B) posterior views, and (C) dissection of the pancreatic duct.

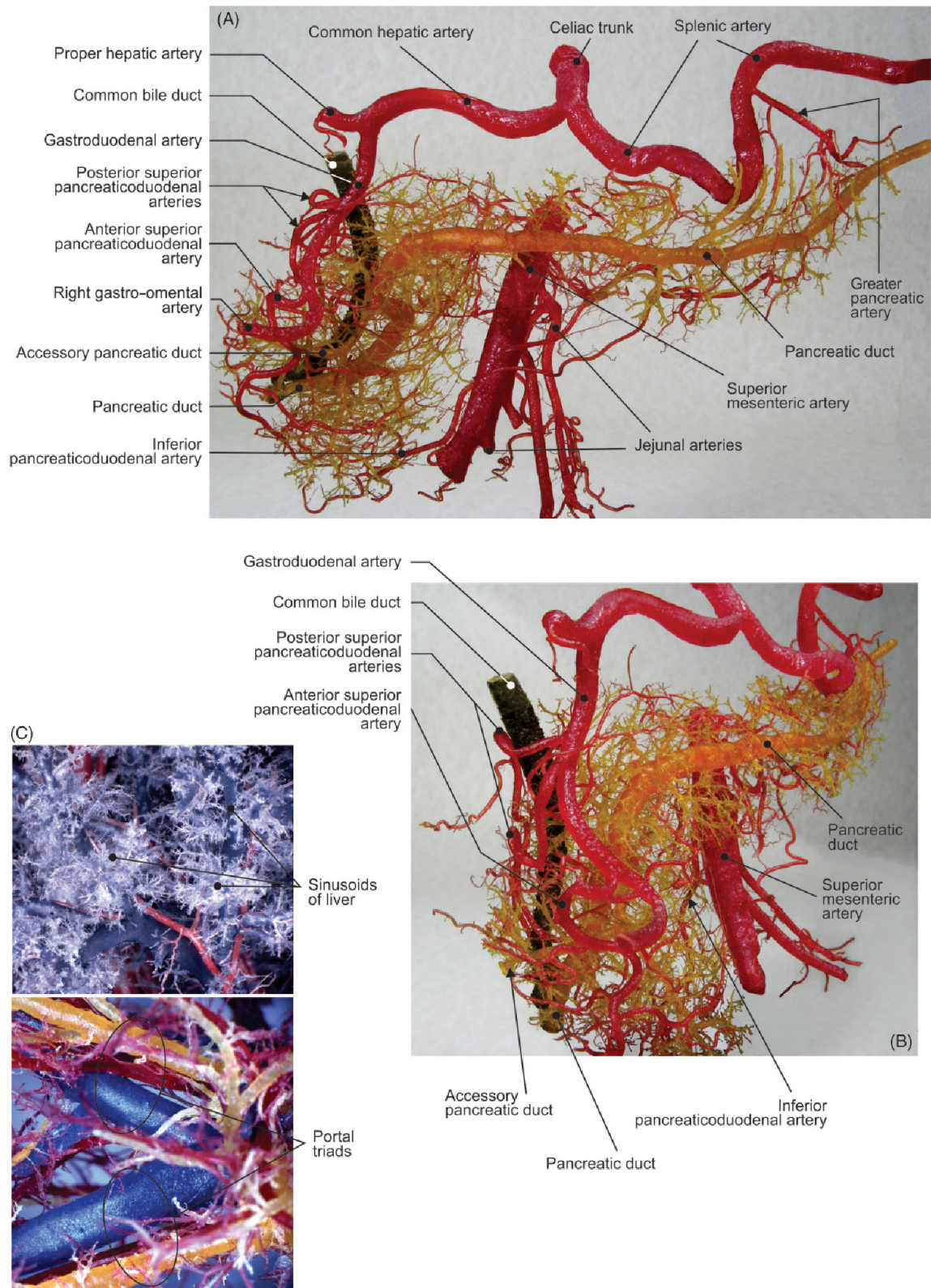


FIGURE 4.12 Corrosion casts of arteries and excretory pancreatic ducts. (A) Anterior view and (B) view from the right side. (C) Corrosion casts of the liver.

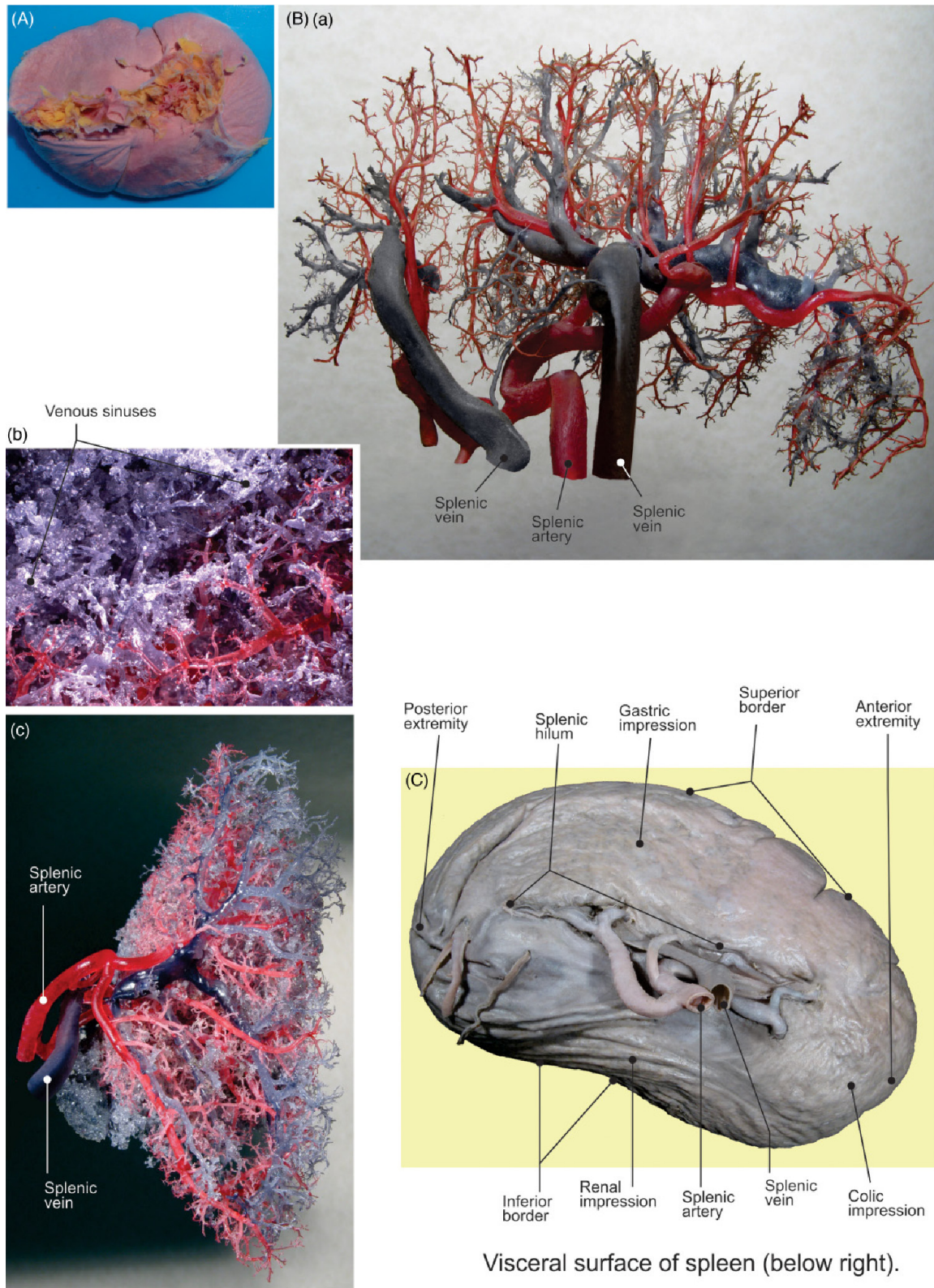


FIGURE 4.13 (A) The native spleen: visceral surface. (B) (a–c) Corrosion casts of the splenic artery and vein branches inside of the spleen. (C) Visceral surface of the spleen.

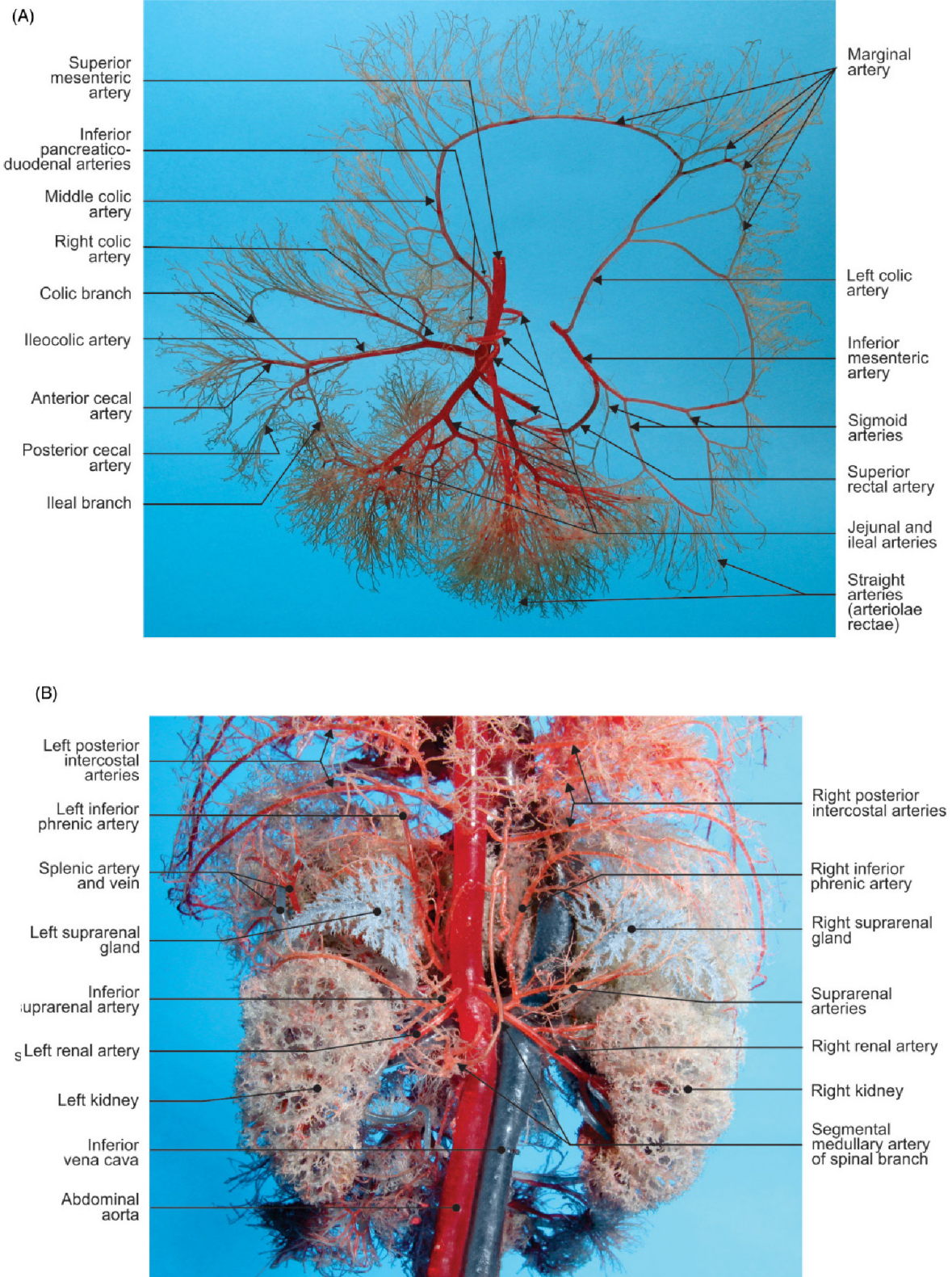


FIGURE 4.14 Corrosion casts of the fetus. (A) Anterior aspect of the intestinal arteries and (B) posterior aspect of the visceral abdominal blood vessels.

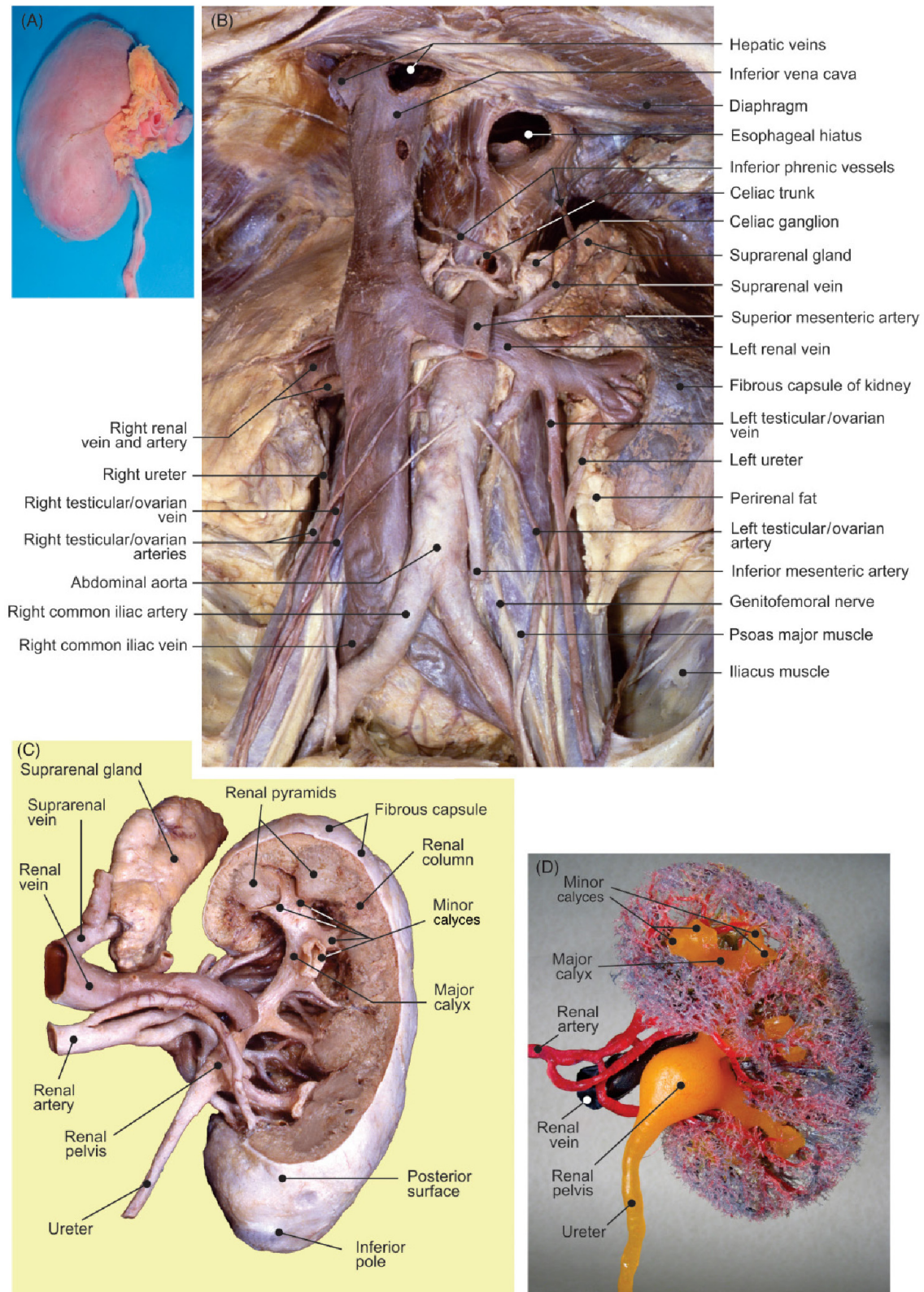


FIGURE 4.15 (A) The native kidney: anterior surface. (B) Kidneys in situ: anterior aspect. Posterior aspect of the right kidney: (C) dissection and (D) corrosion cast.

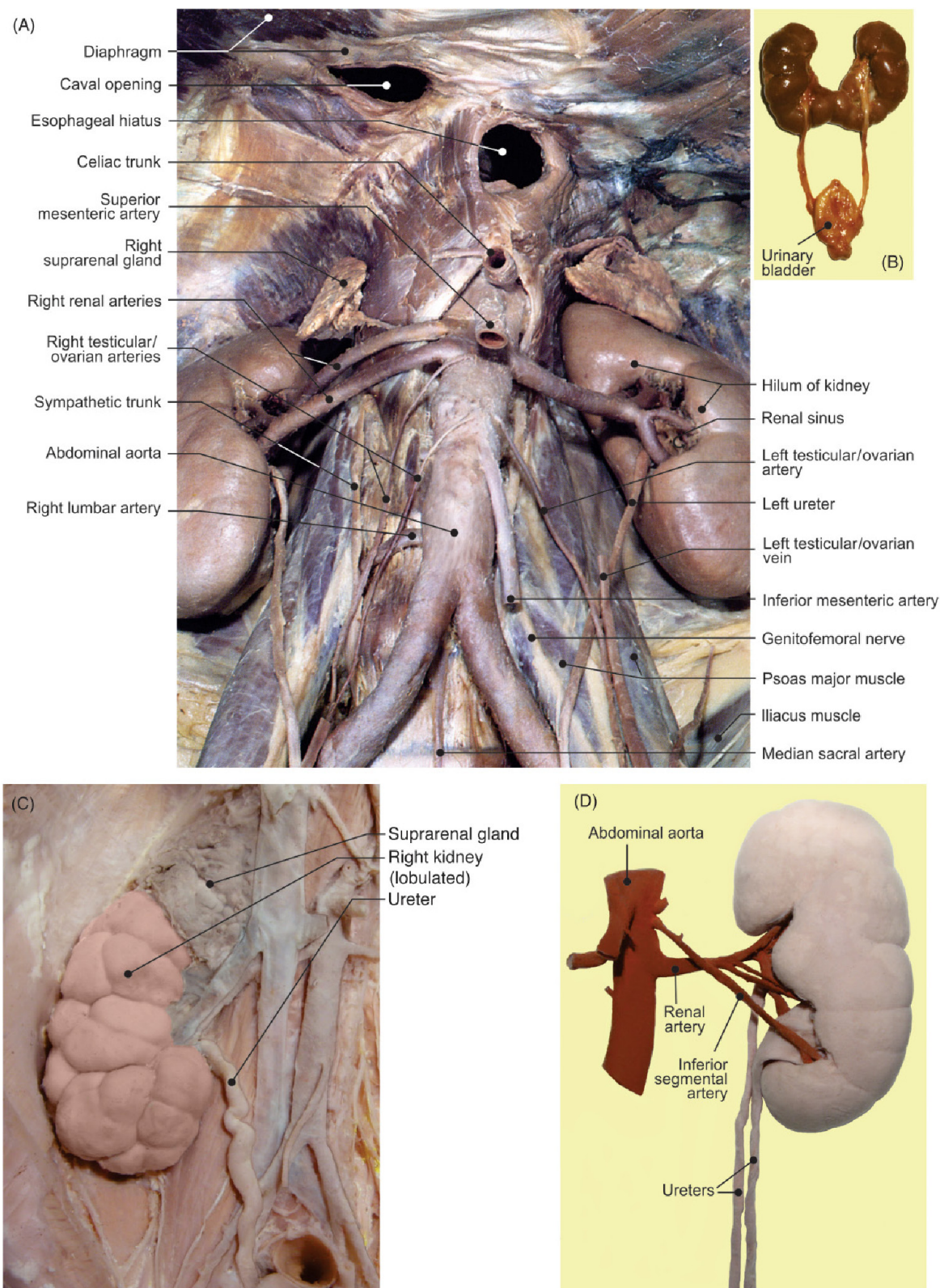


FIGURE 4.16 (A) Anterior aspect of the kidneys after the removal of veins. Newborn: (B) arcuate kidney and (C) right suprarenal gland, lobulated kidney, and ureter in situ. (D) Double ureter and accessory inferior segmental artery.

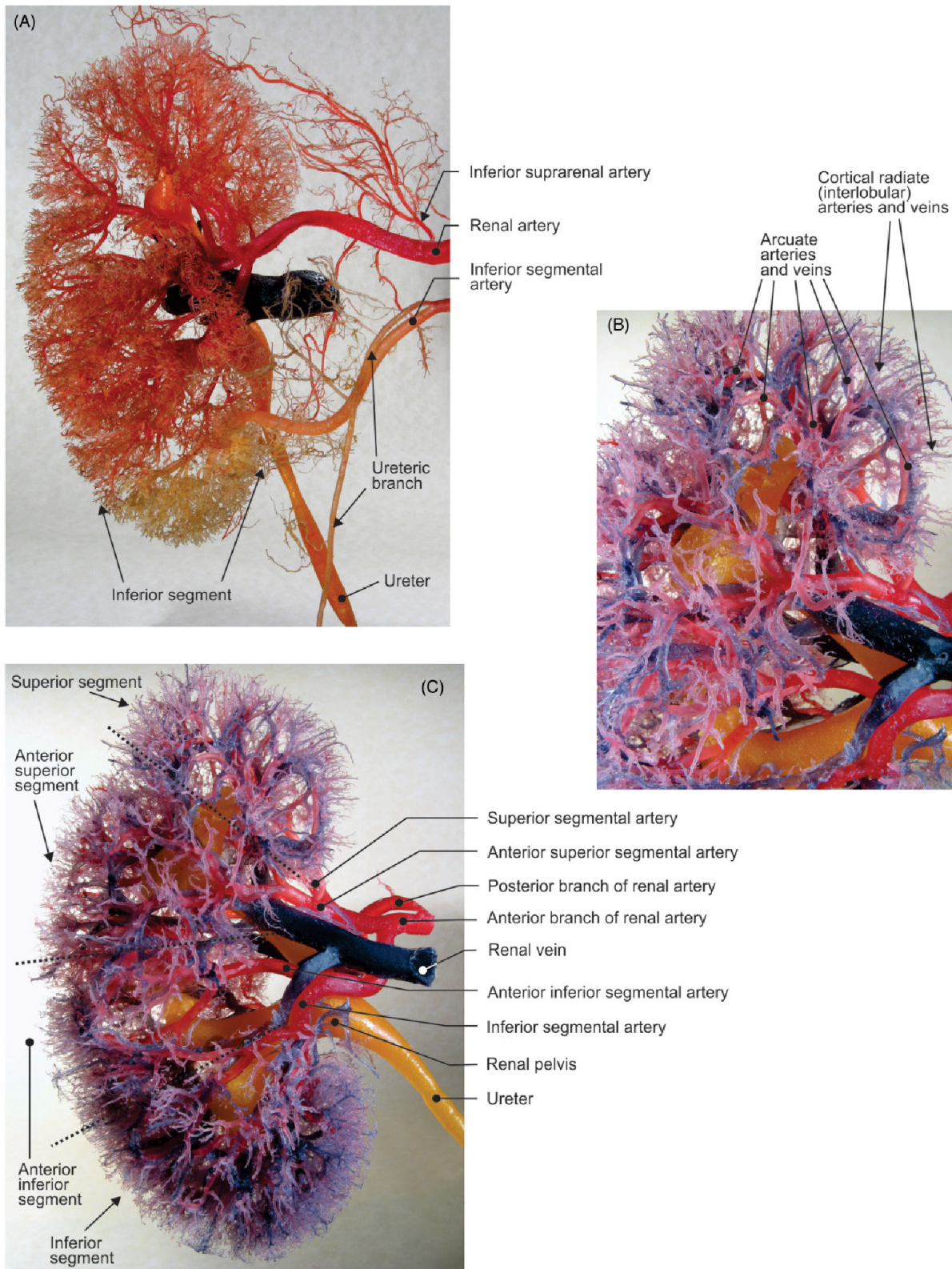


FIGURE 4.17 (A–C) Different views of the anterior aspect of the right kidney (corrosion casts).

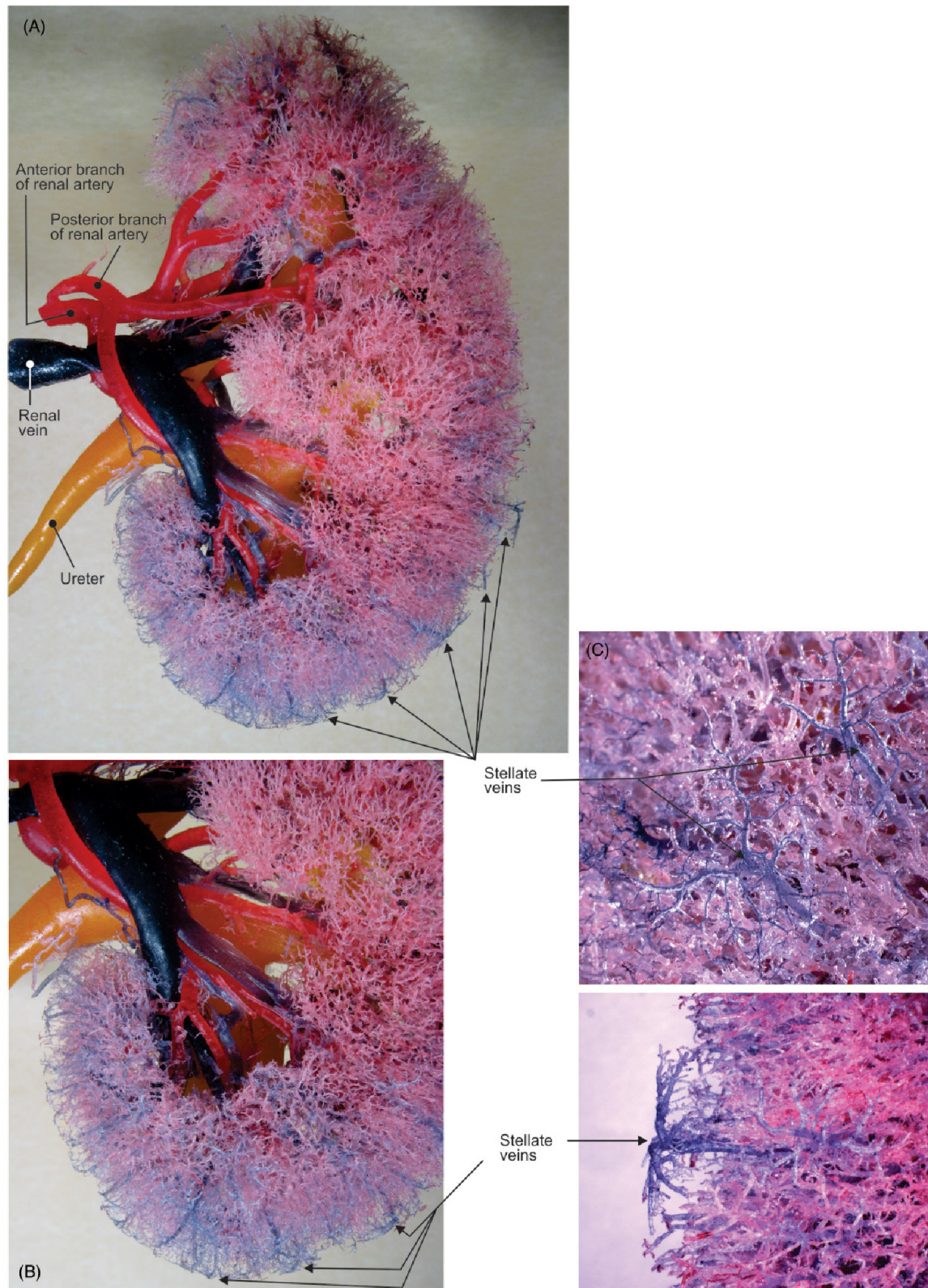


FIGURE 4.18 (A–C) Different views of the posterior aspect of the right kidney (corrosion casts).

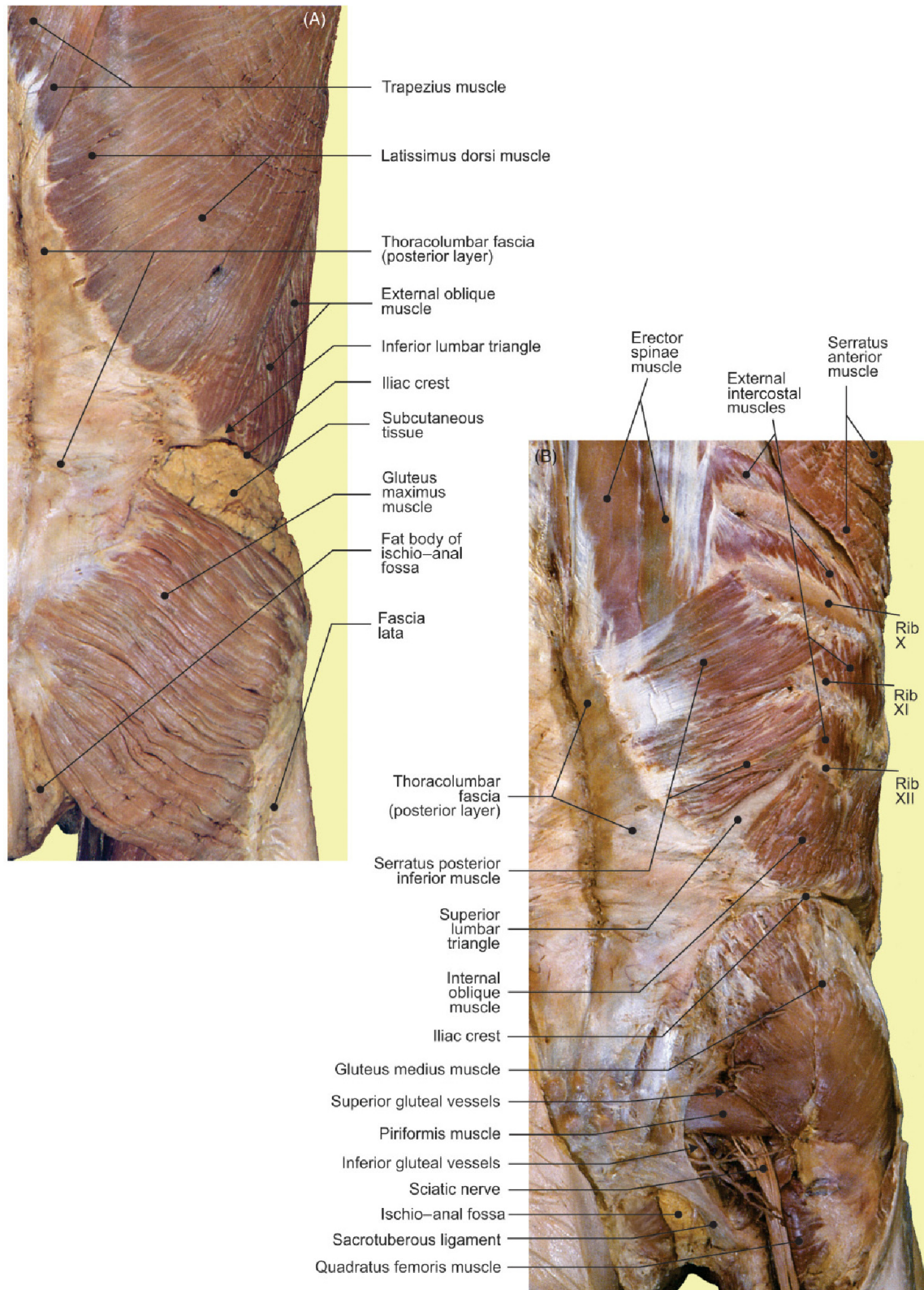


FIGURE 4.19 The posterior aspect of the abdominal wall and gluteal region. (A) Superficial and (B) middle layers.

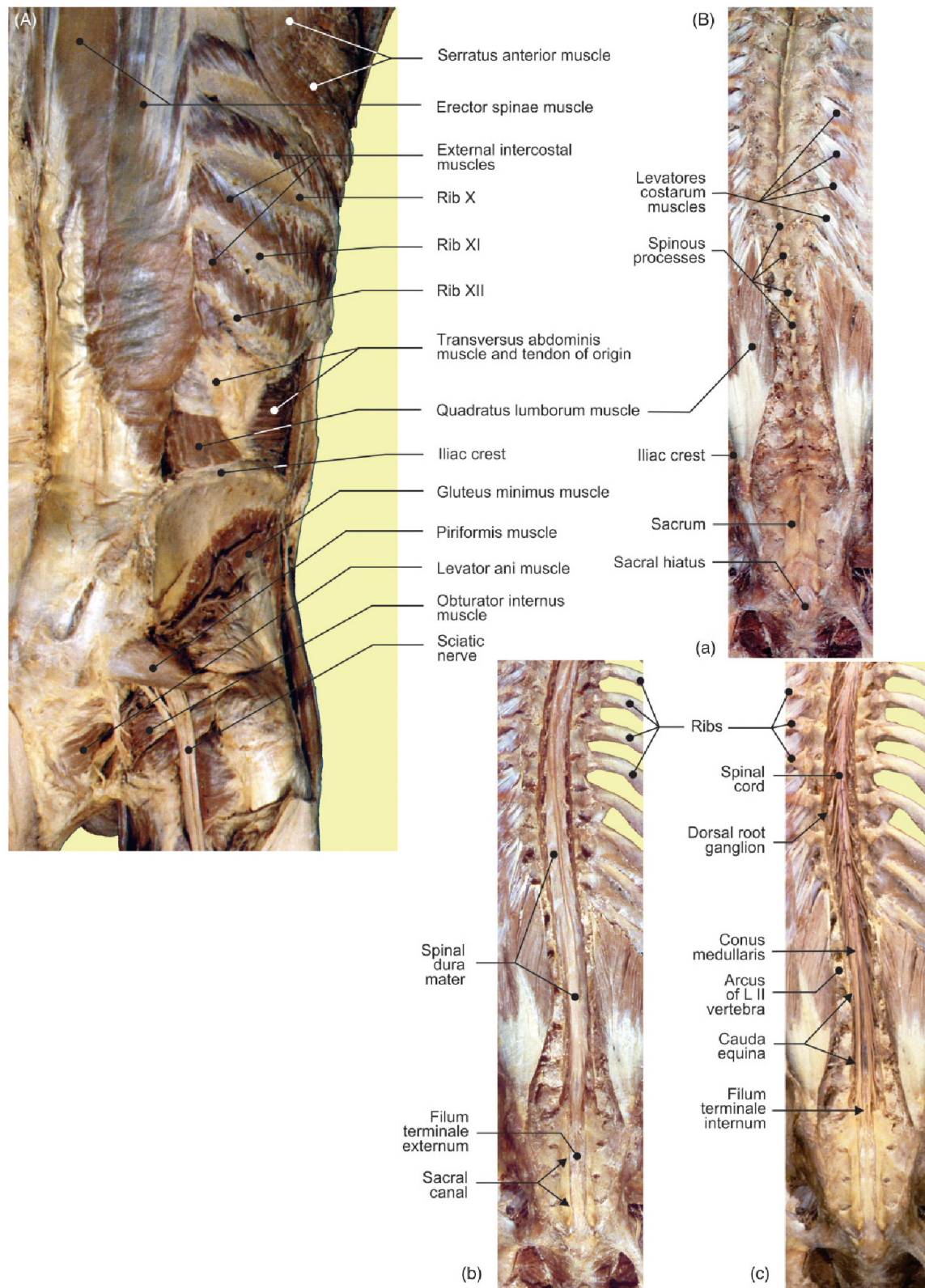


FIGURE 4.20 (A) Posterior aspect of the abdominal wall and gluteal region: deep layer. (B) Posterior views of the vertebral column: (a) spinal processes; (b) dura mater, after the spinal processes were removed; and (c) spinal cord, after dura mater was removed.

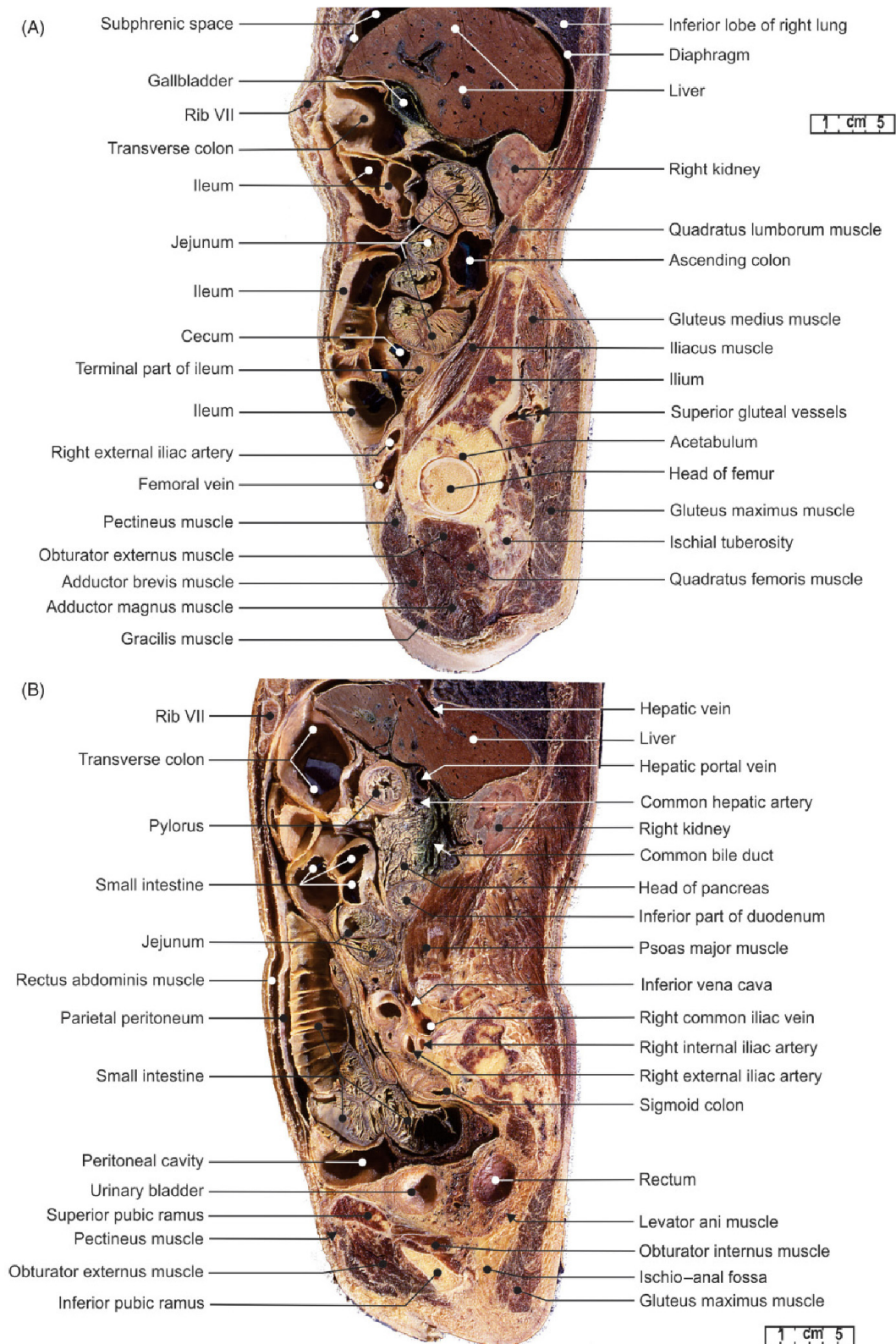


FIGURE 4.21 The abdomen and pelvis. (A) Sagittal sections of the gallbladder and (B) pancreatic head.

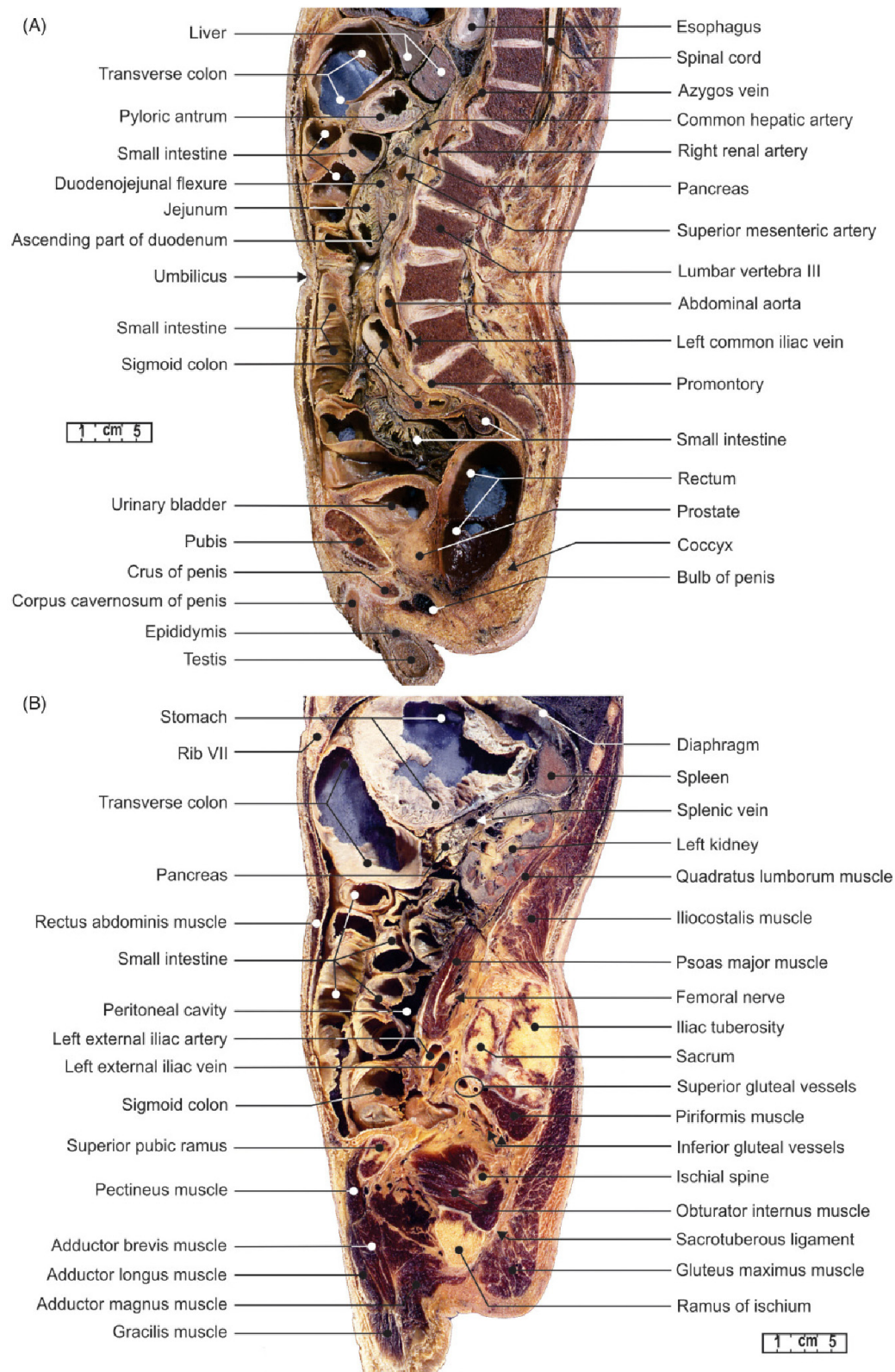


FIGURE 4.22 The abdomen and pelvis. (A) Sagittal sections of the spinal canal and cord and (B) the left kidney.



FIGURE 4.23 Sections of the human body (refer to Figs. 3.25A,B, 3.26A, 4.21B, and 4.22A). (A) Right sagittal section of the pancreatic head and right kidney. (B) Midsagittal and (C) left sagittal sections of the descending aorta.

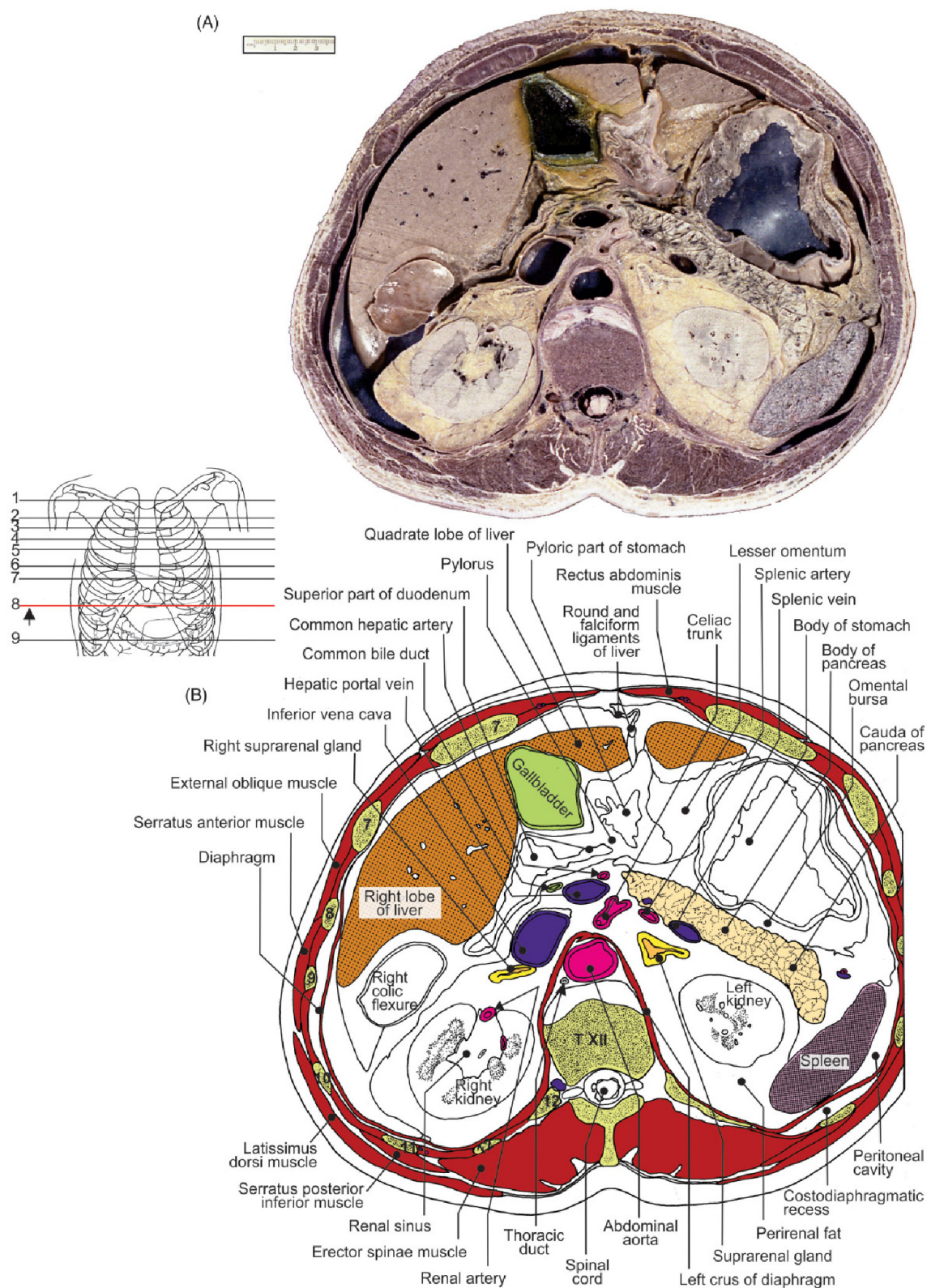


FIGURE 4.24 Transverse section of the abdomen at the T12 vertebral level. (A) Section and (B) illustration.

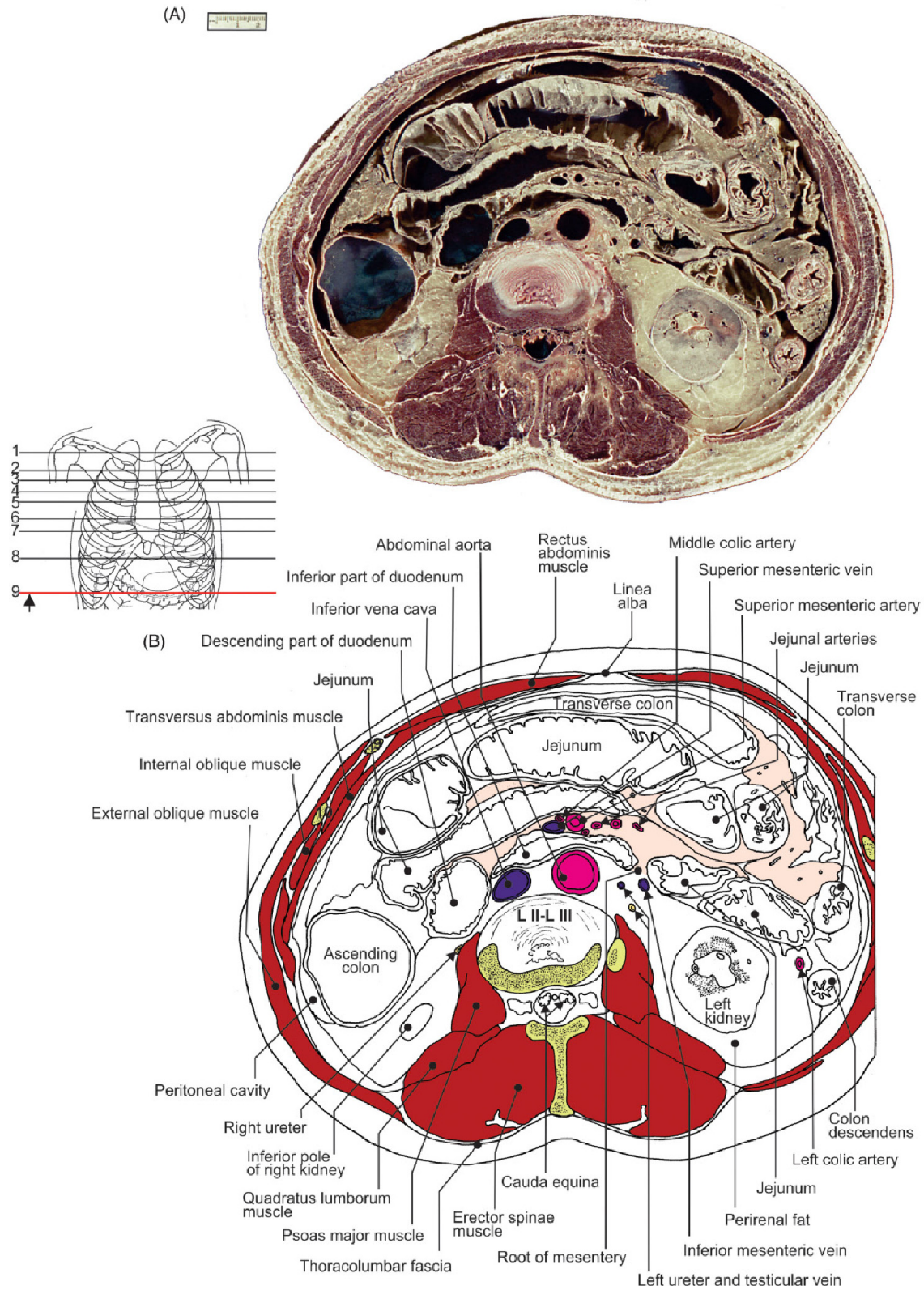


FIGURE 4.25 Transverse section of the abdomen at the L2–L3 vertebral level. (A) Section and (B) illustration.

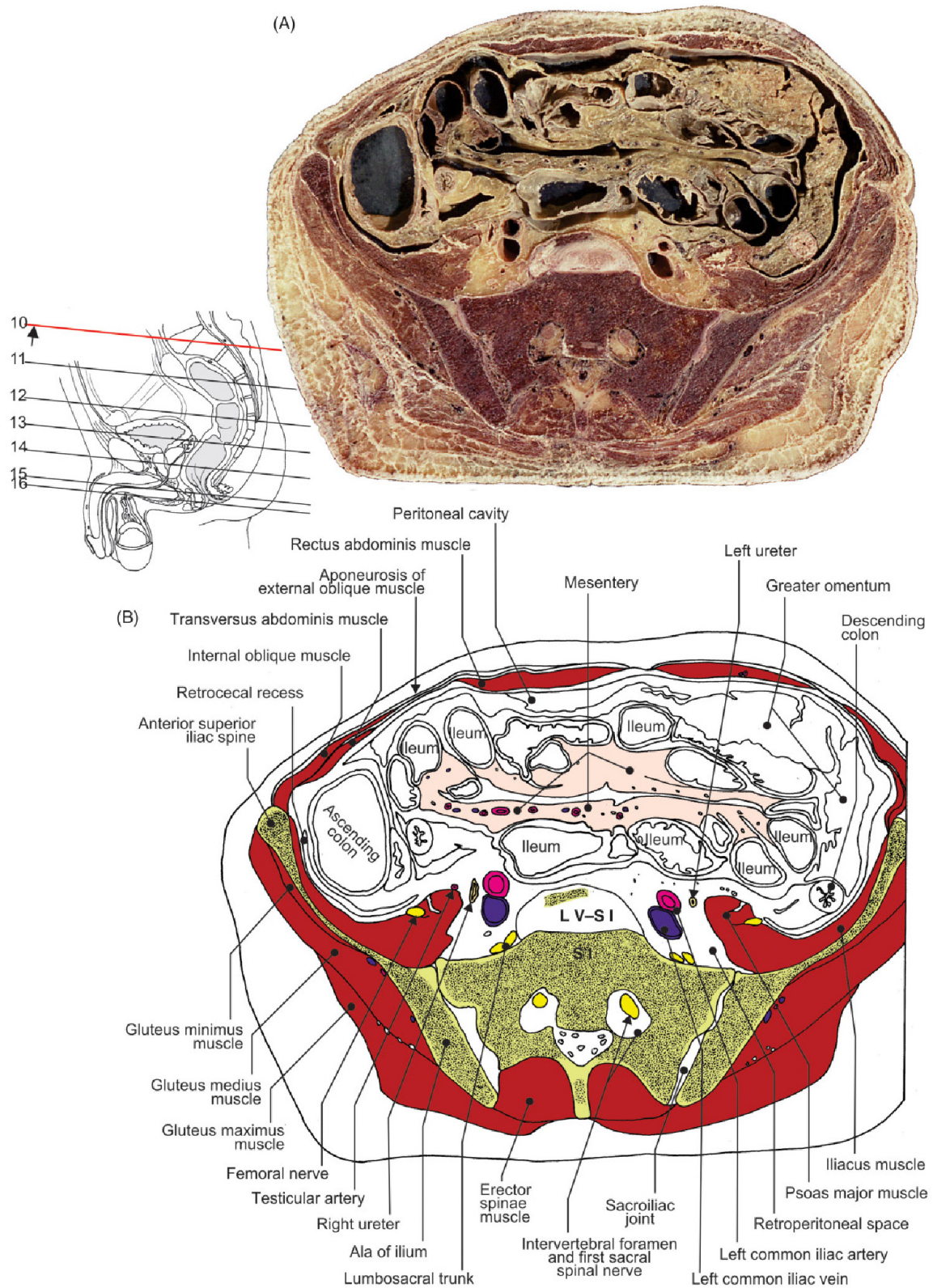


FIGURE 4.26 Transverse section of the abdomen at the L5-S1 vertebral level. (A) Section and (B) illustration.

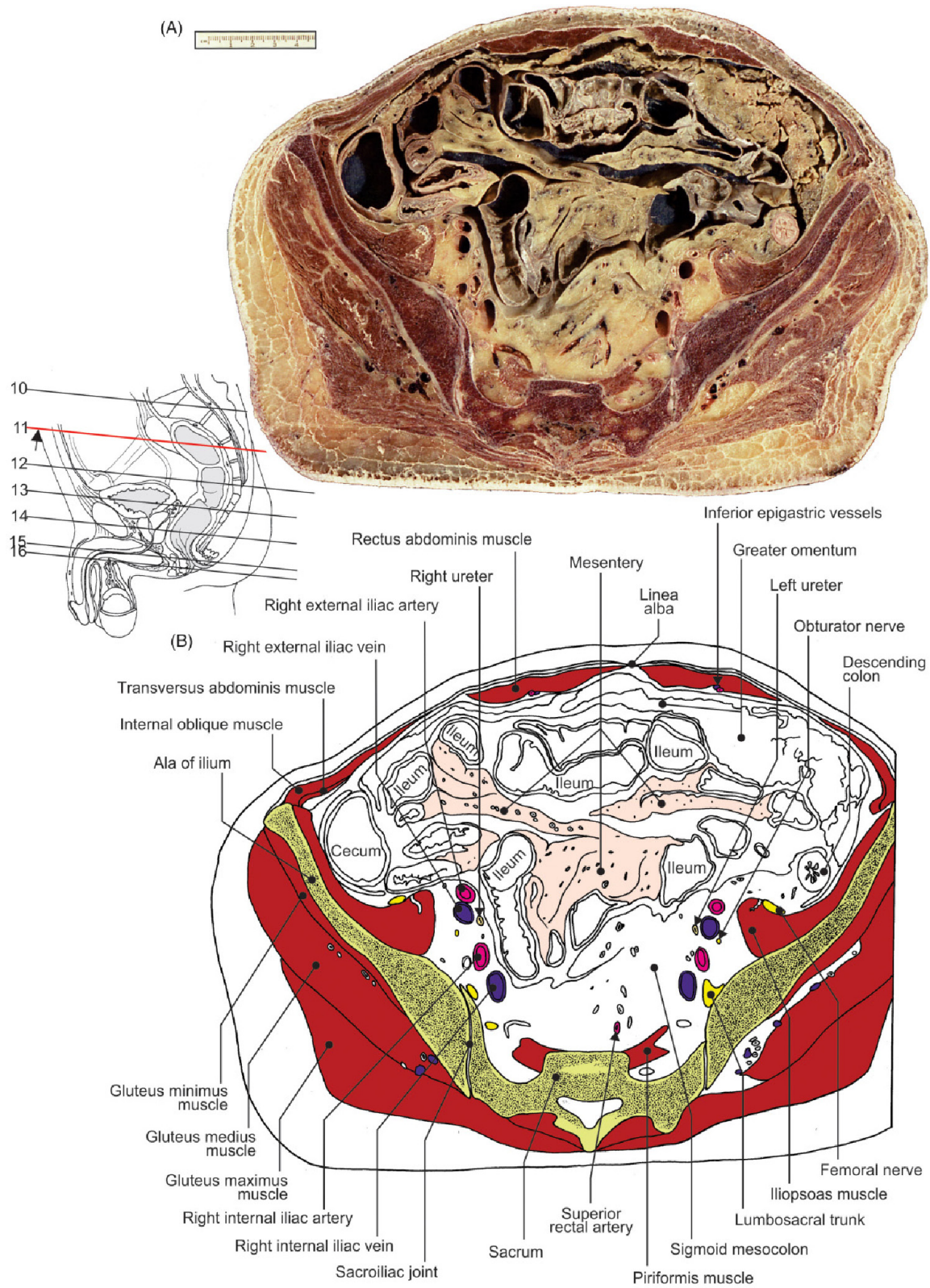


FIGURE 4.27 Transverse section of the abdomen and pelvis at the midpelvic level. (A) Section and (B) illustration.

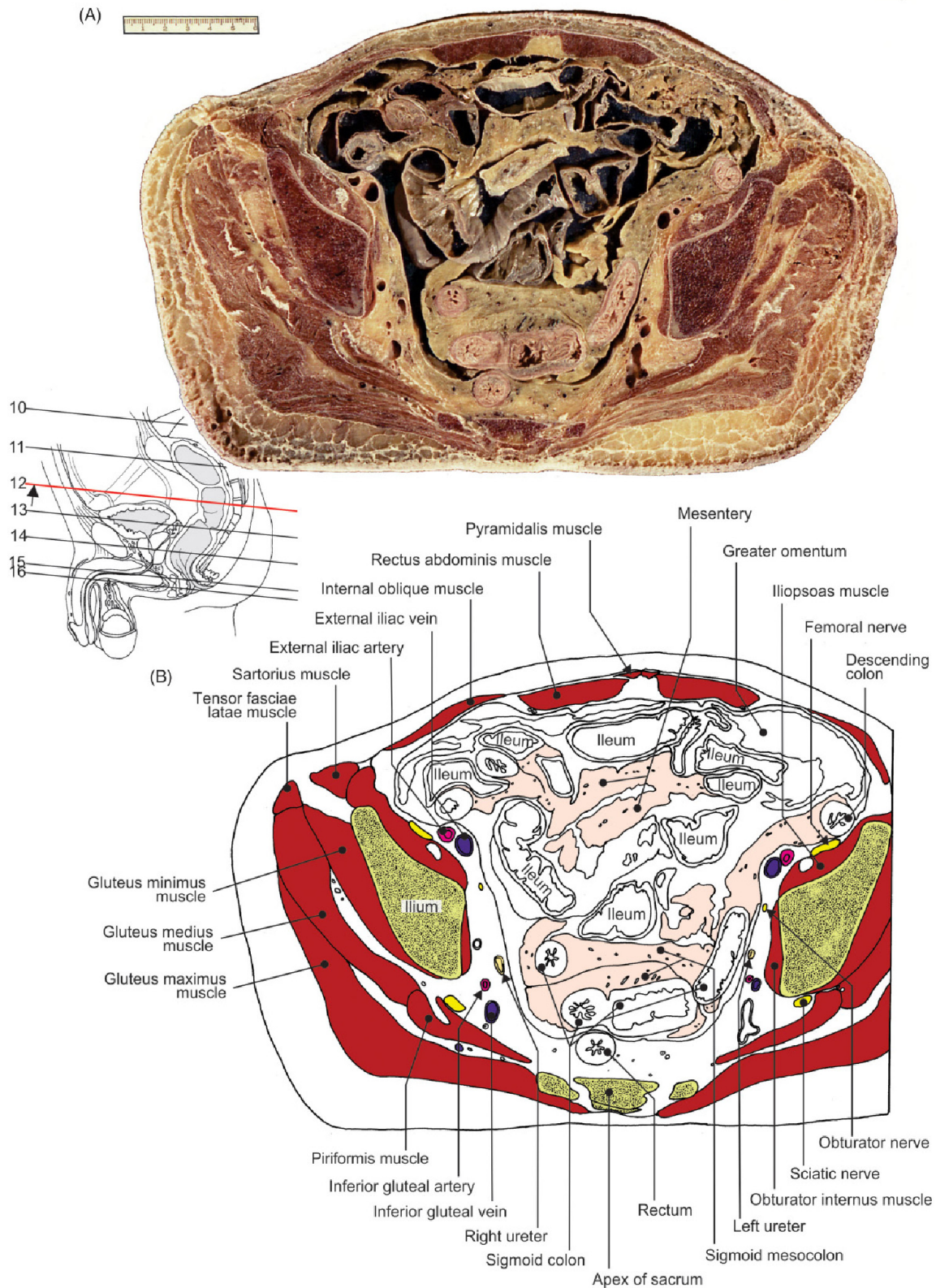


FIGURE 4.28 Transverse section of the abdomen and pelvis at the sacral tip level. (A) Section and (B) illustration.

Chapter 5

Pelvis and Perineum with 5–6-Month-Old Fetal Specimens

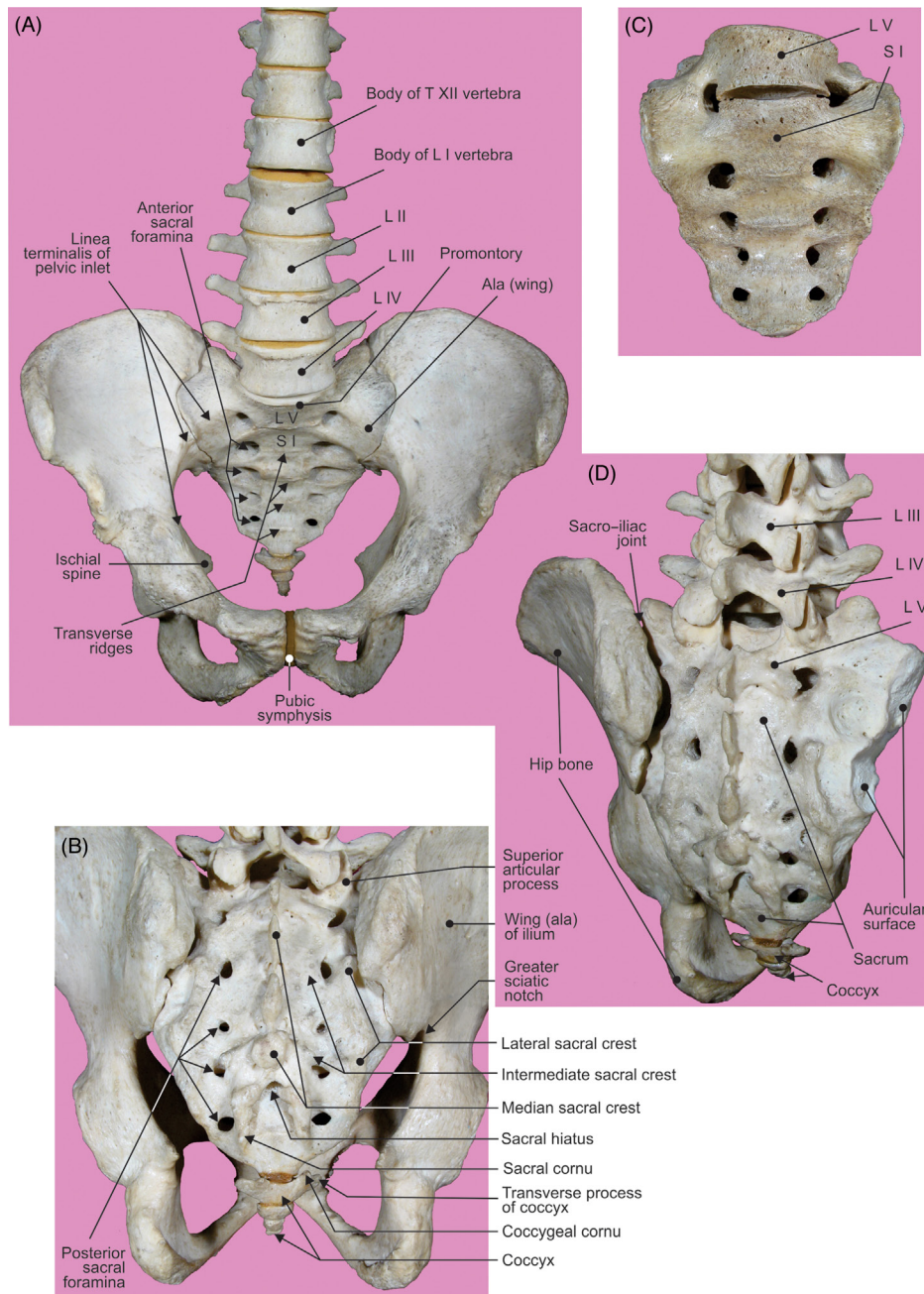


FIGURE 5.1 The sacrum and coccyx. L5 vertebra: (A) Anterior and (B–D) posterior views. Incomplete fusion of L5 vertebra with sacrum: anterior view and total sacralization of L5 vertebra.

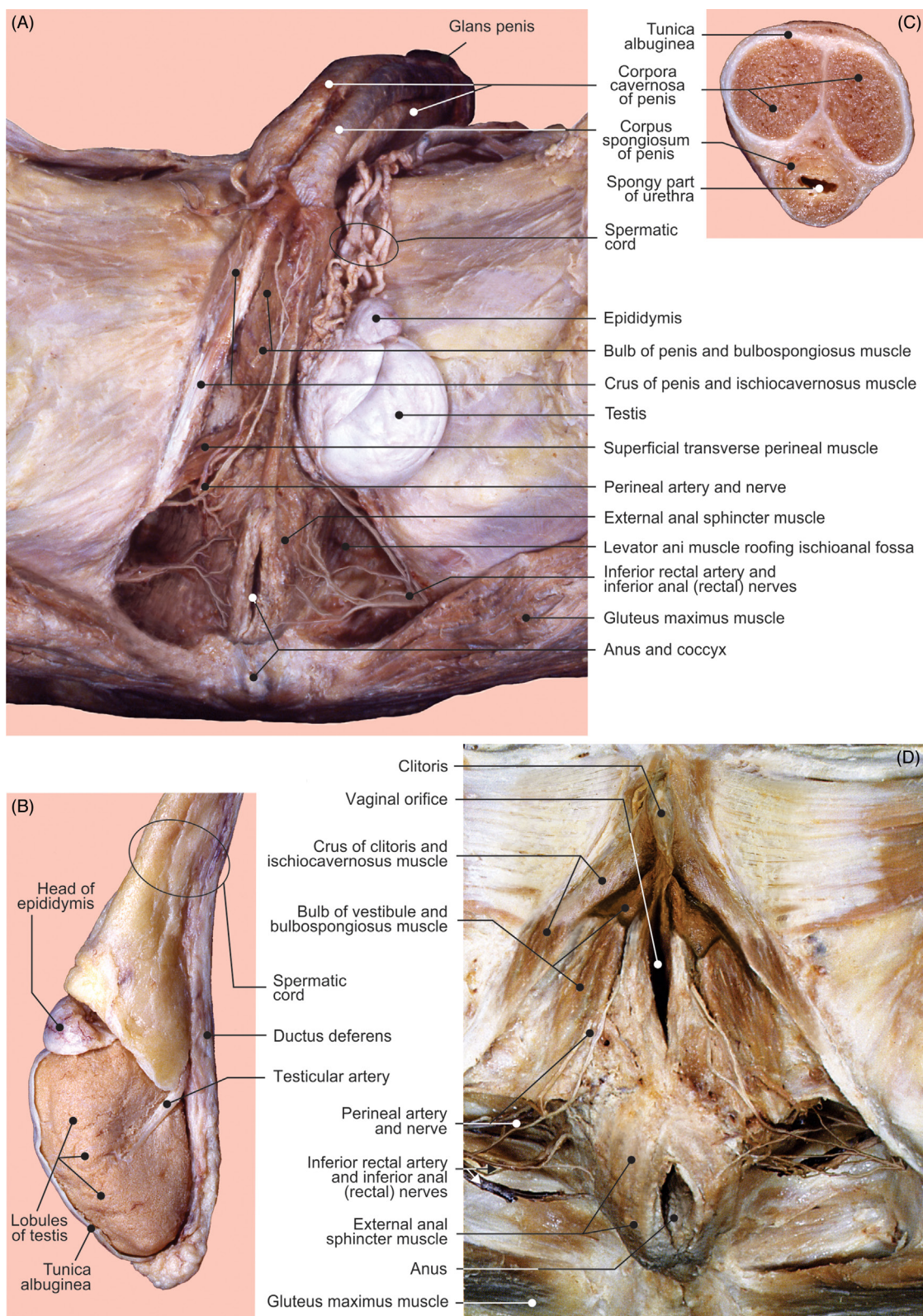


FIGURE 5.2 Perineum: (A) male. Testis: (B) dissection. Penis: (C) transverse section of shaft. Perineum: (D) female.

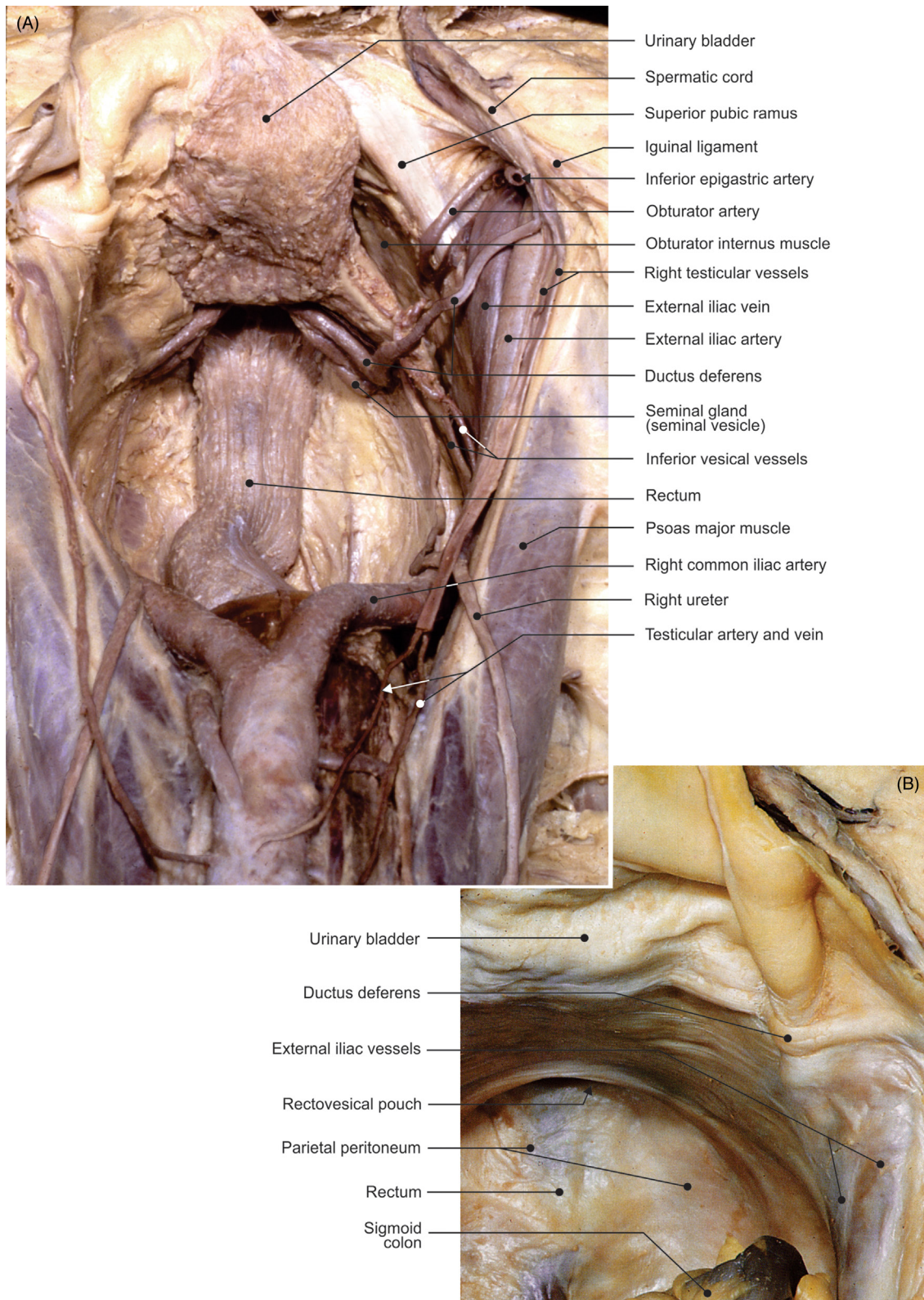


FIGURE 5.3 The male pelvis. View from above: (A) organs with peritoneum removed and (B) organs covered by peritoneum.

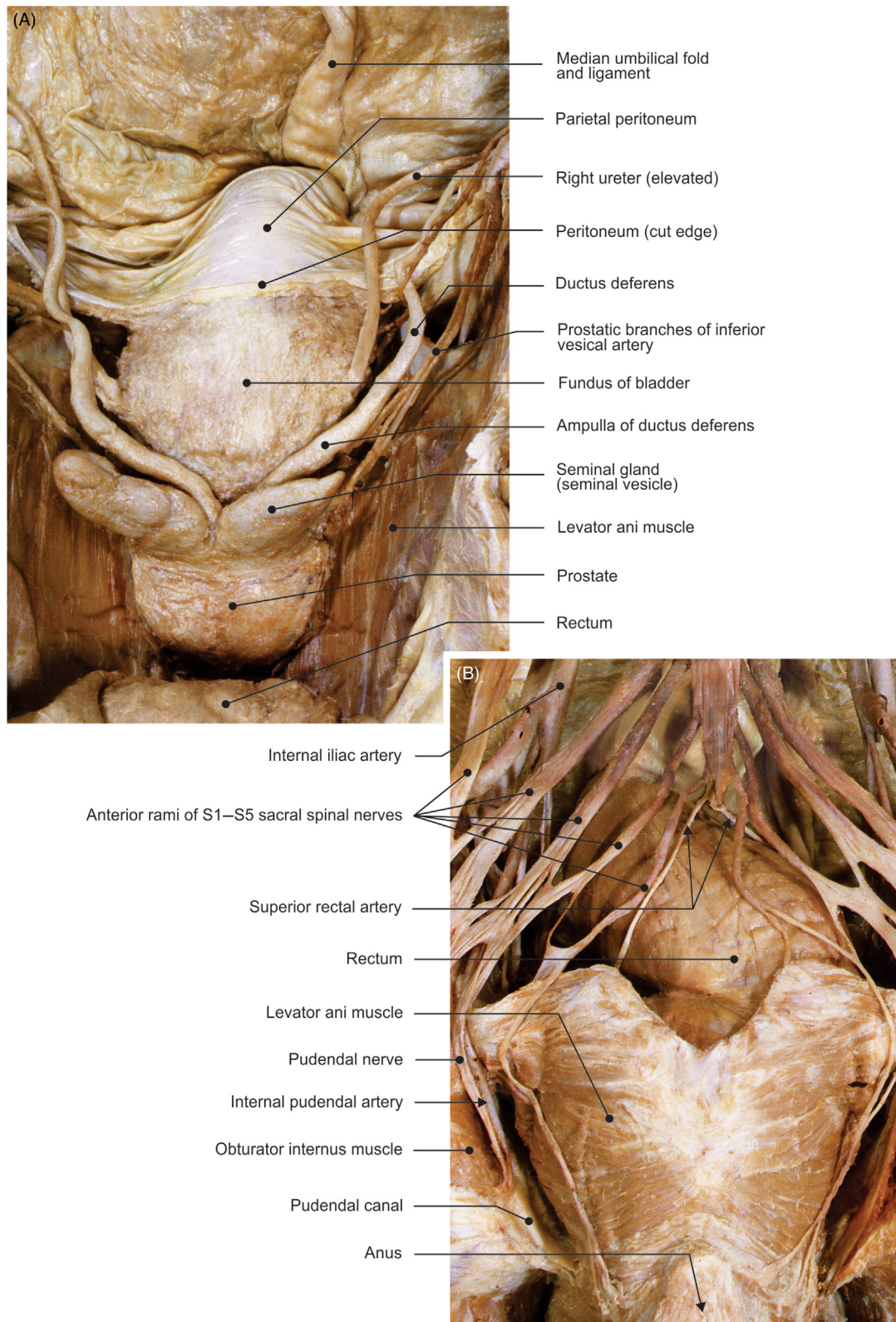


FIGURE 5.4 The prostate and urinary bladder. (A) View from behind. Levator ani muscle and branches of sacral plexus: (B) view from behind.

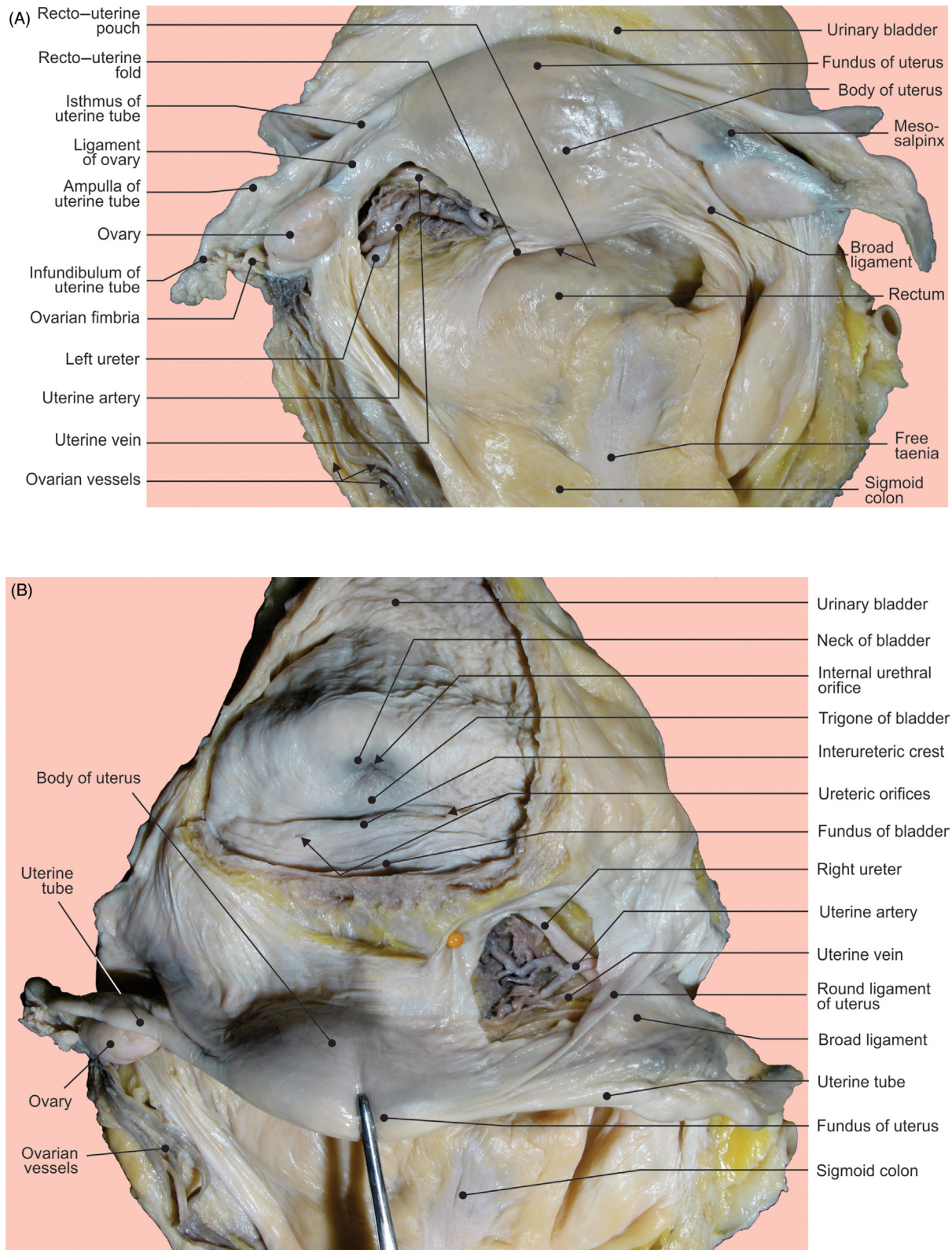


FIGURE 5.5 The female internal genital organs viewed from above. (A) Open broad ligament. Female internal genital organs viewed from above: (B) uterus is reflected and broad ligament and urinary bladder opened.

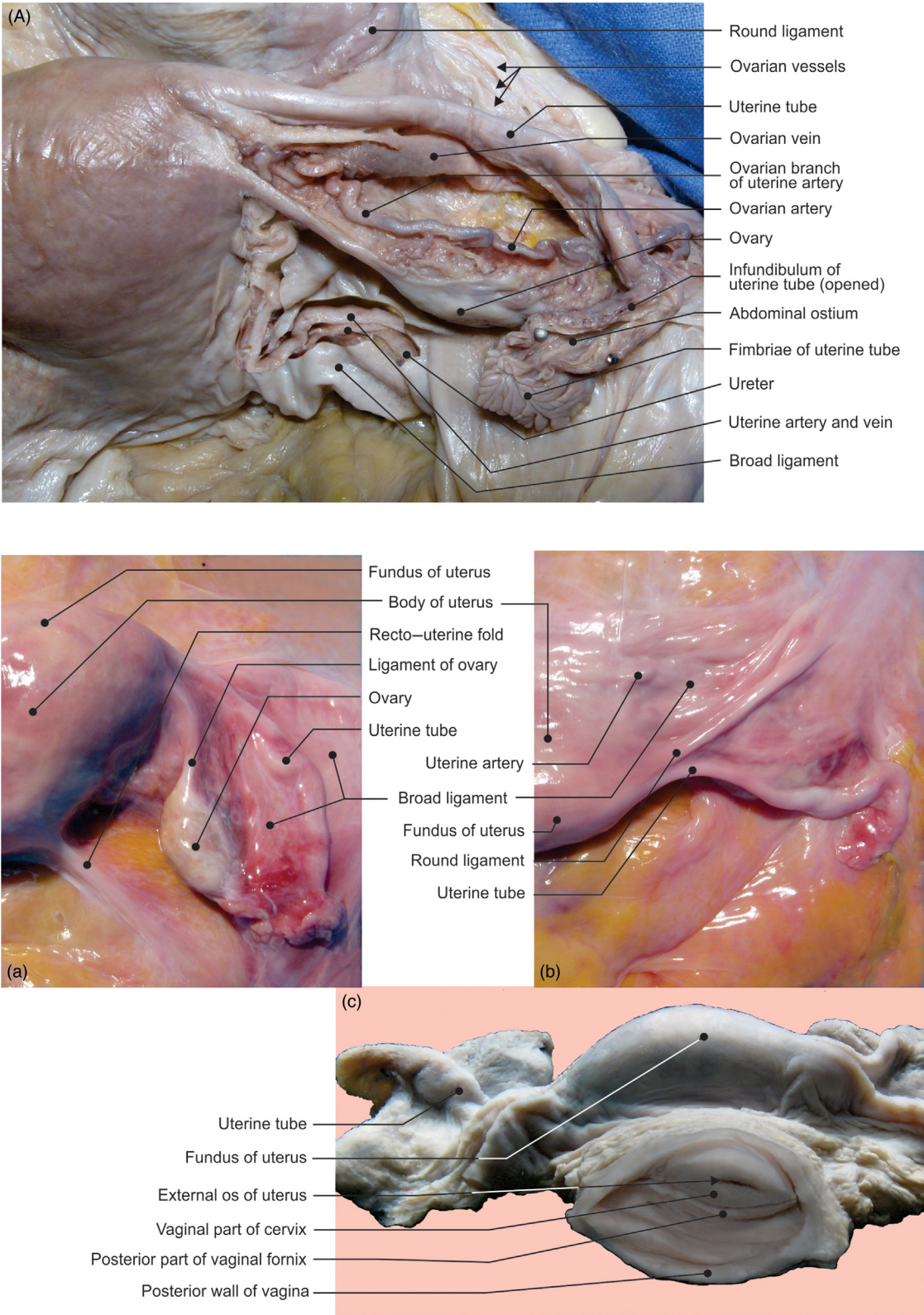


FIGURE 5.6 The female internal genital organs viewed from above. (A) Open broad ligament. Uterus and associated structures in situ: view from above on (a) posterior and (b) anterior surfaces of native samples, and (c) view from the front.

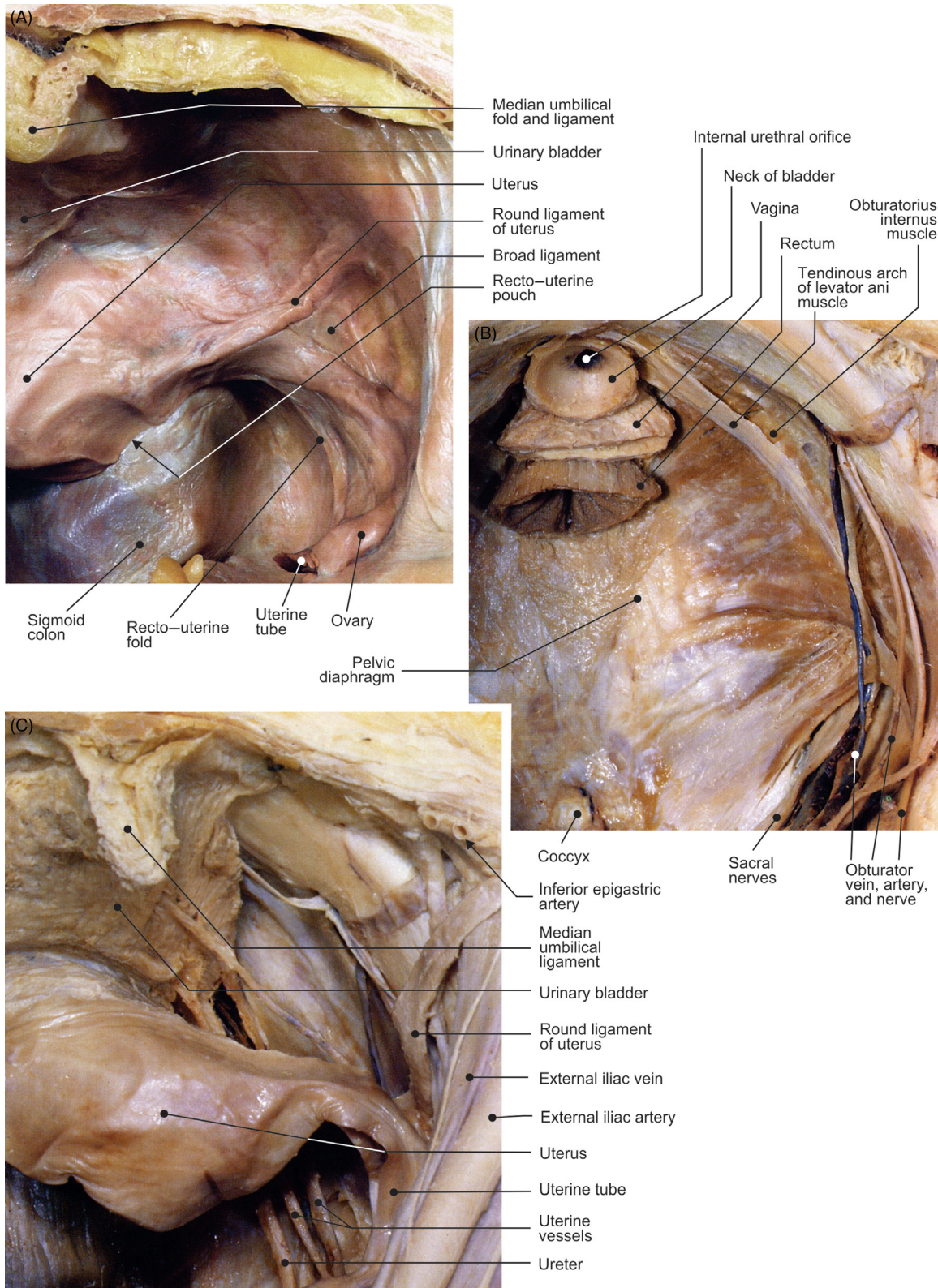


FIGURE 5.7 The female pelvic organs covered by peritoneum. (A) View from above. Female pelvic diaphragm: (B) view from above. Female pelvic organs with peritoneum removed: (C) view from above.

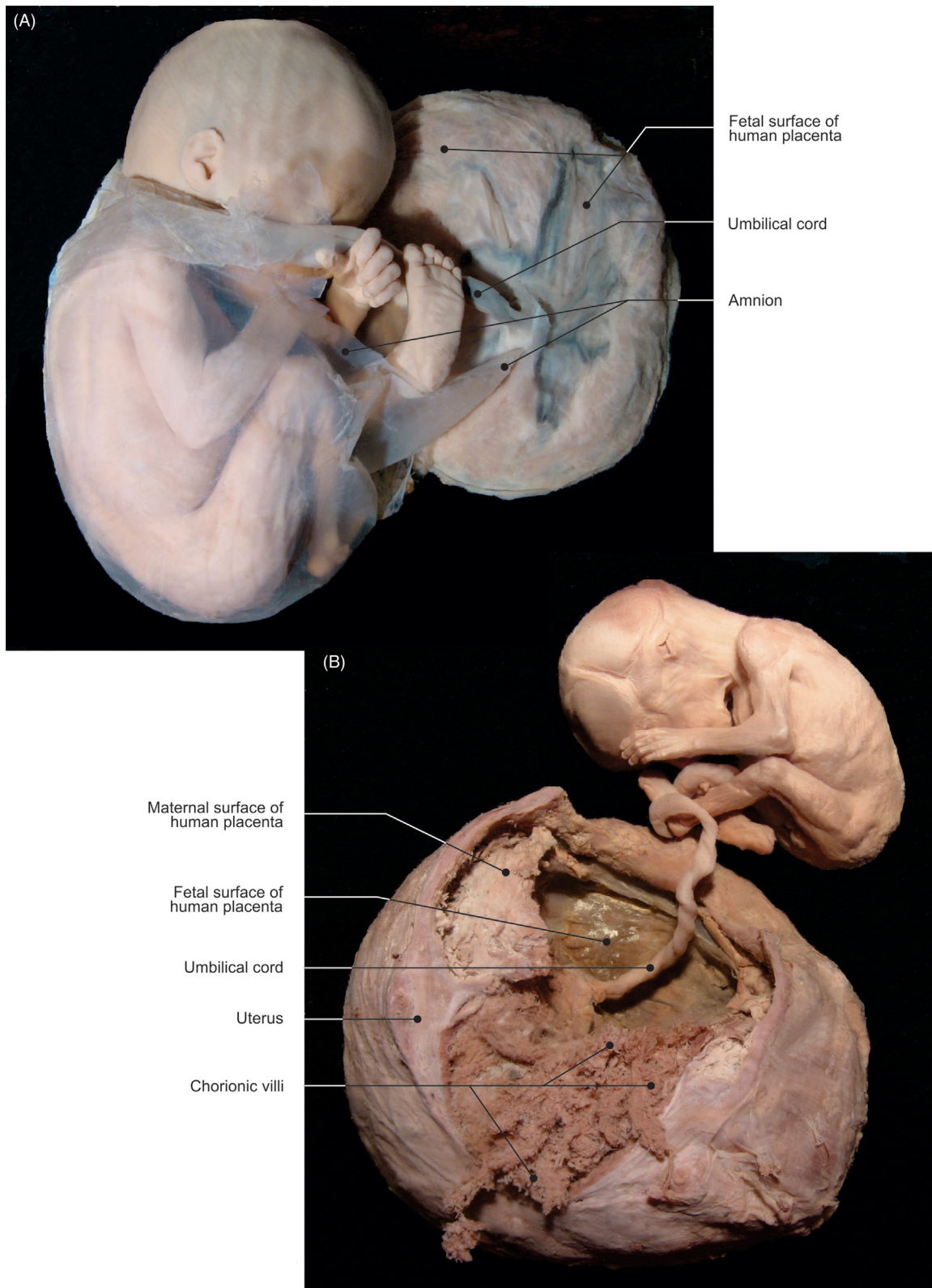


FIGURE 5.8 Five- to six-month-old fetal specimens. (A–B) Different specimens demonstrating the fetus–uterus relationship.

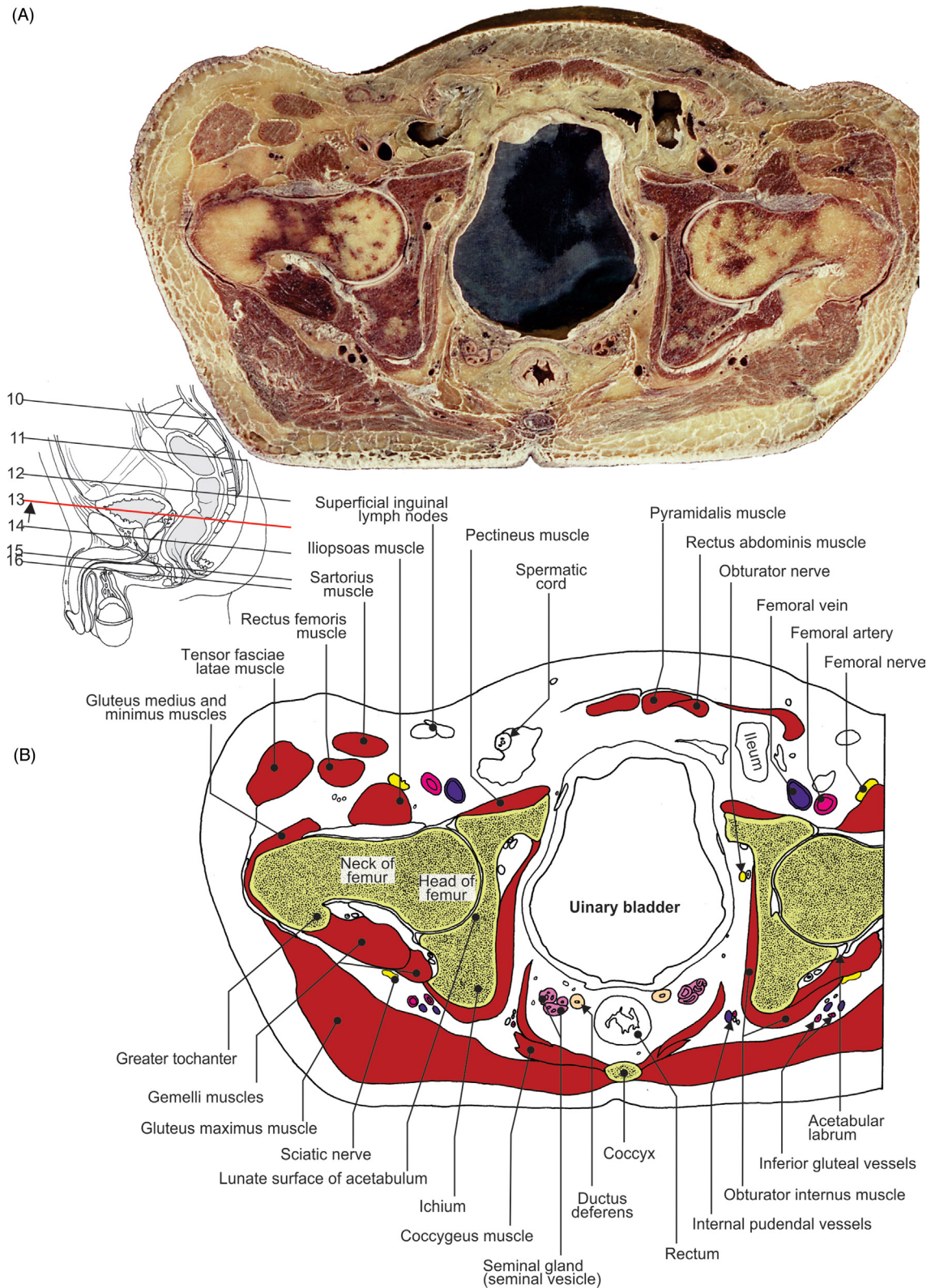
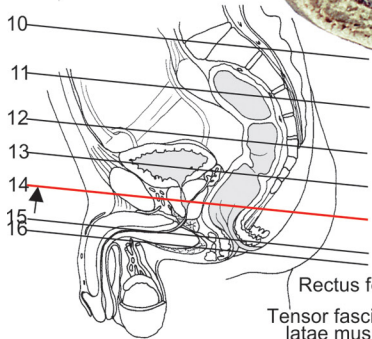


FIGURE 5.9 The male pelvis and hip joint. Transverse section at the coccygeal level. (A) Section and (B) illustration.

(A)



(B)

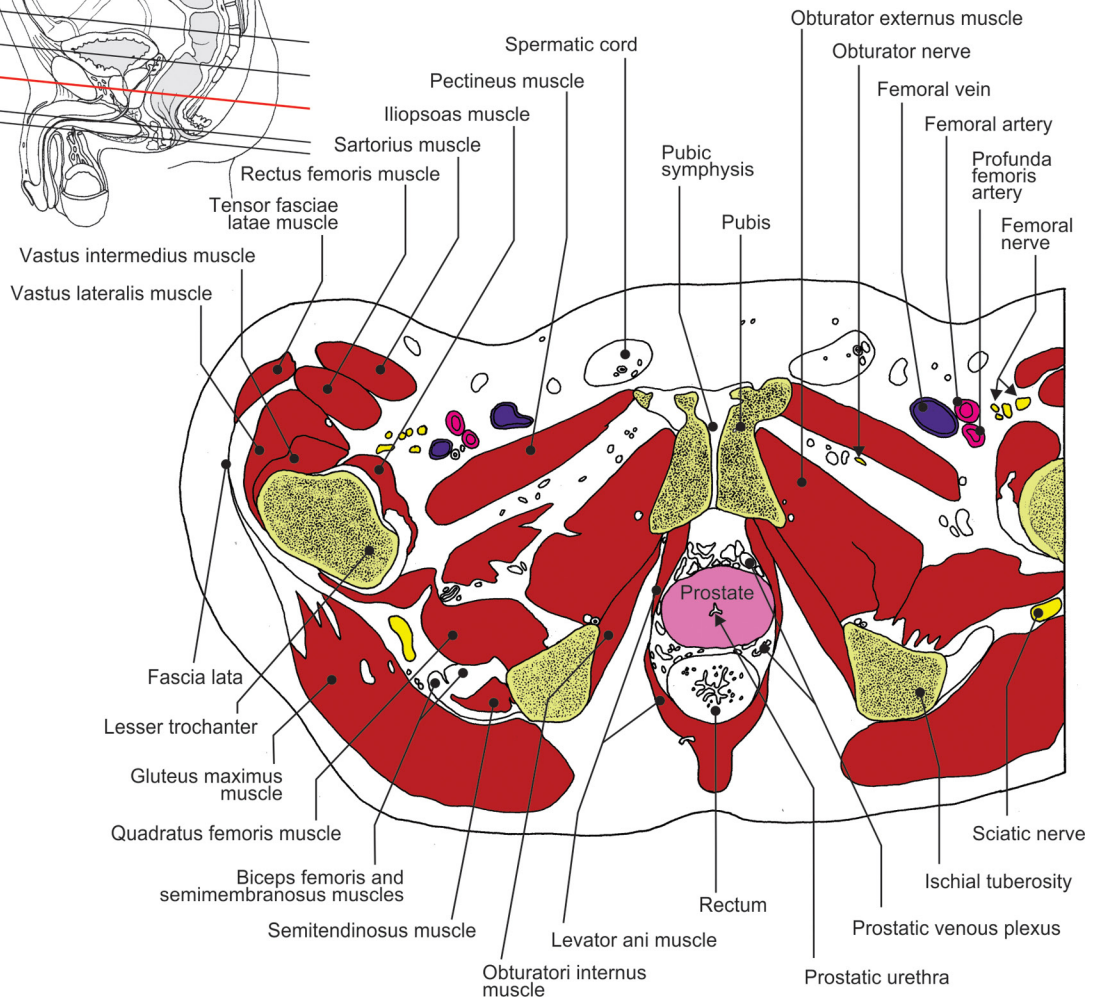


FIGURE 5.10 The male pelvis and hip region. Transverse section at the prostatic level. (A) Section and (B) illustration.

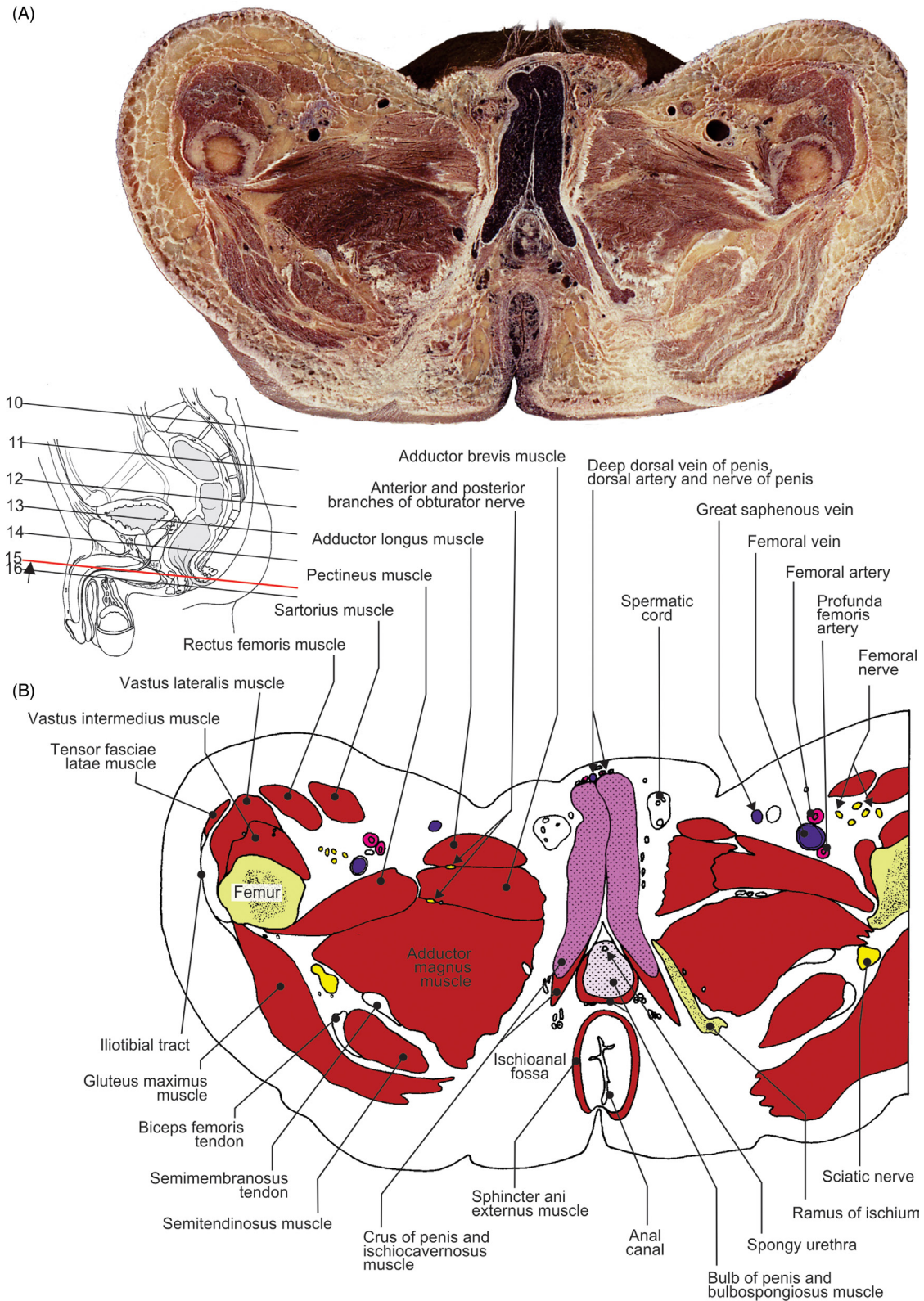
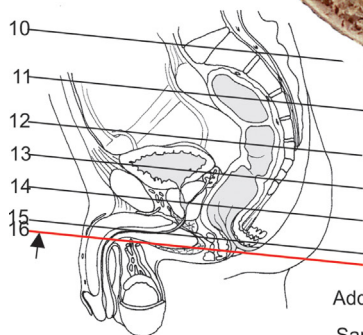


FIGURE 5.11 Male perineum. Transverse section at the level of root of penis. (A) Section and (B) illustration.

(A)



(B)

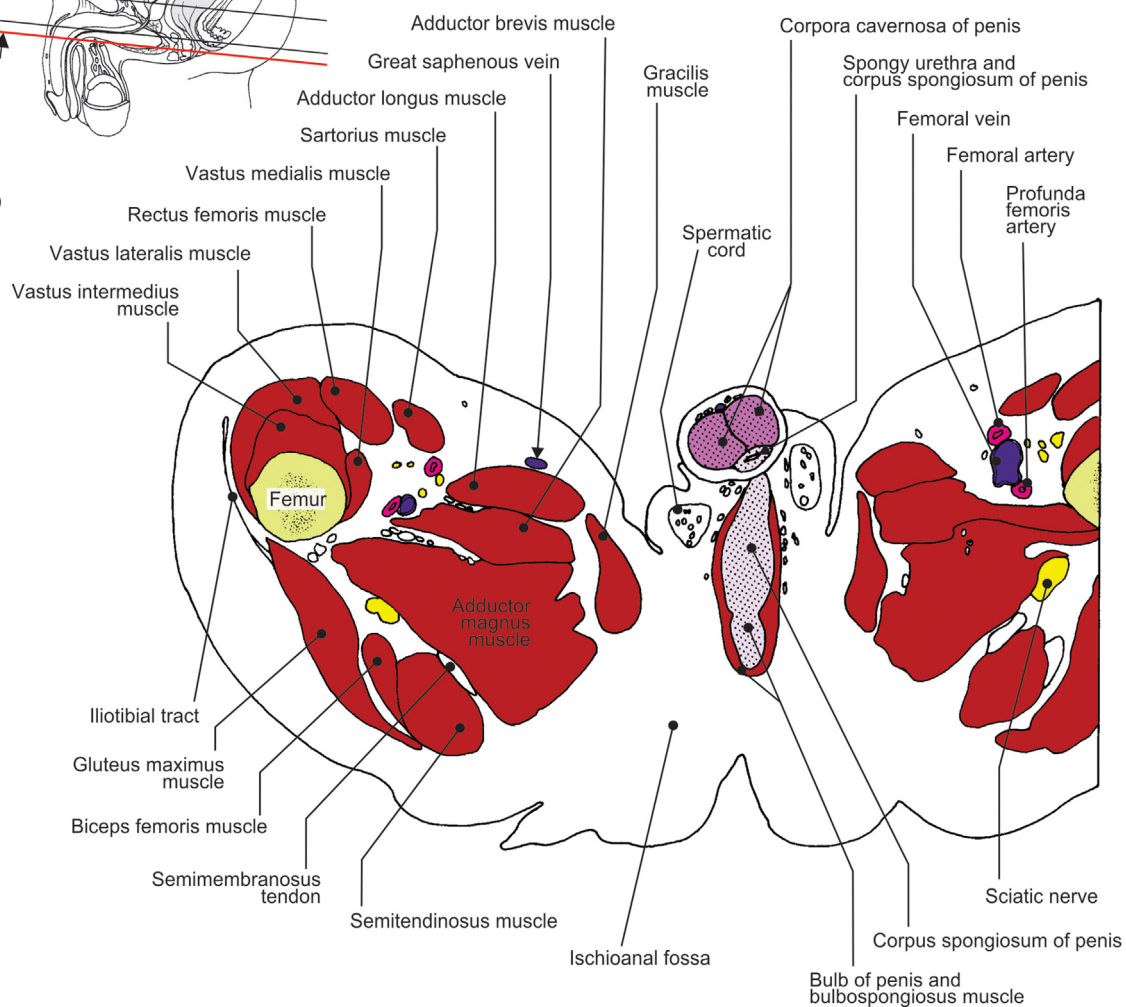


FIGURE 5.12 The transverse section of the perineum and upper region of thigh. (A) Section and (B) illustration.

Chapter 6

Head and Neck Regions and Vascularization

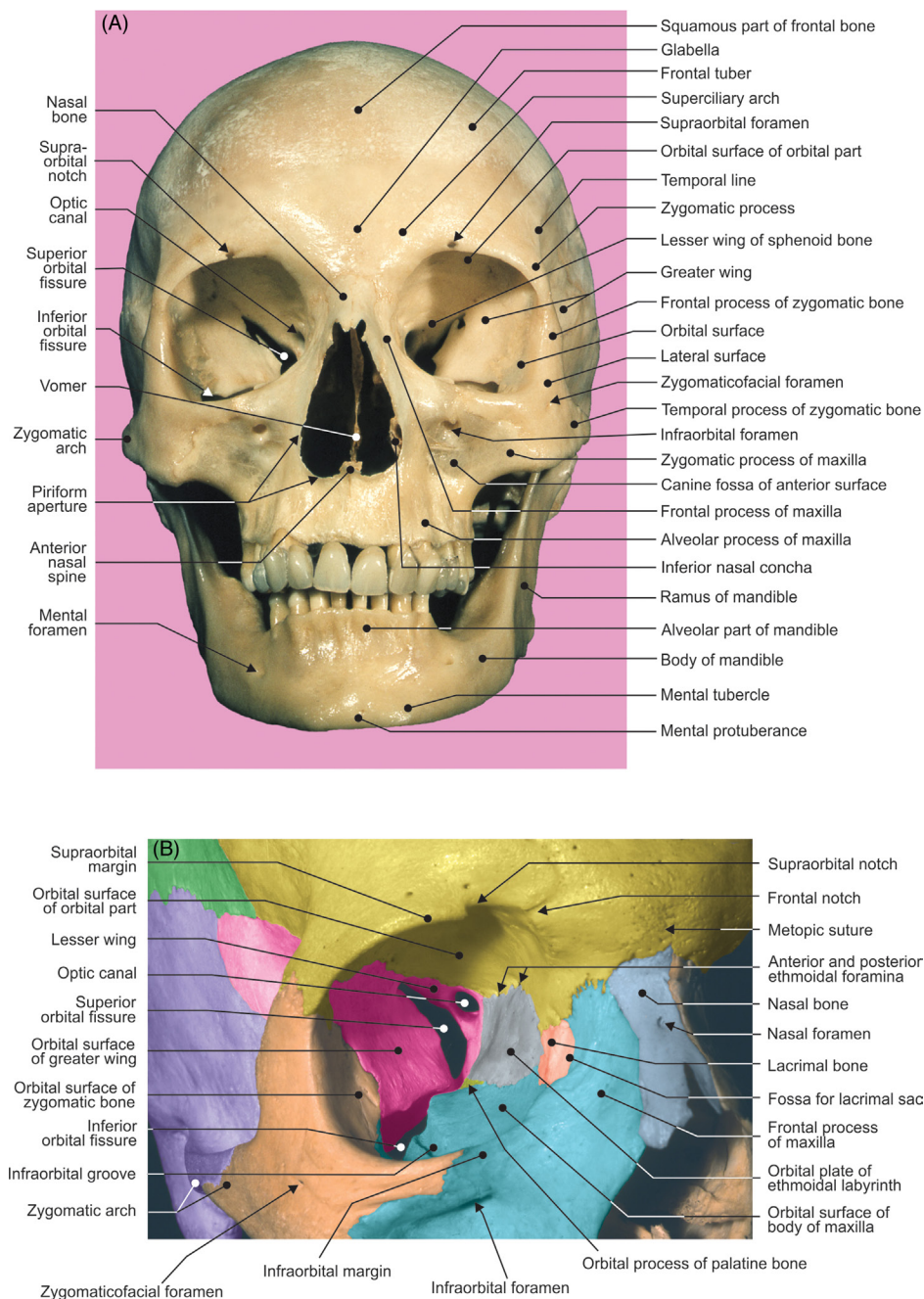


FIGURE 6.1 (A) The anterior surface of skull and mandible. (B) Right orbit: view from the front.

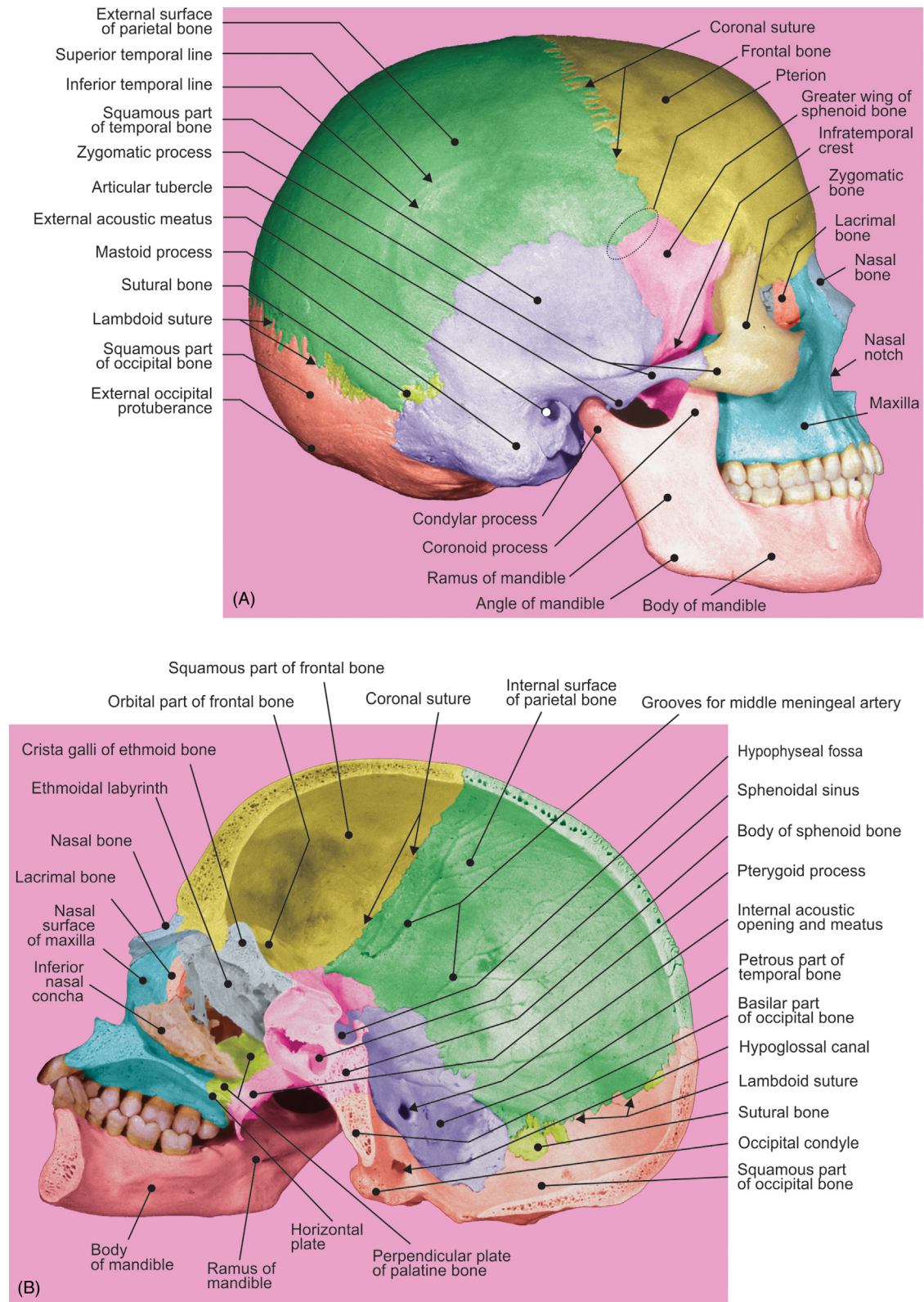


FIGURE 6.2 (A) The lateral surface of cranium and mandible. (B) Midsagittal section of cranium and mandible, right half: inside view.

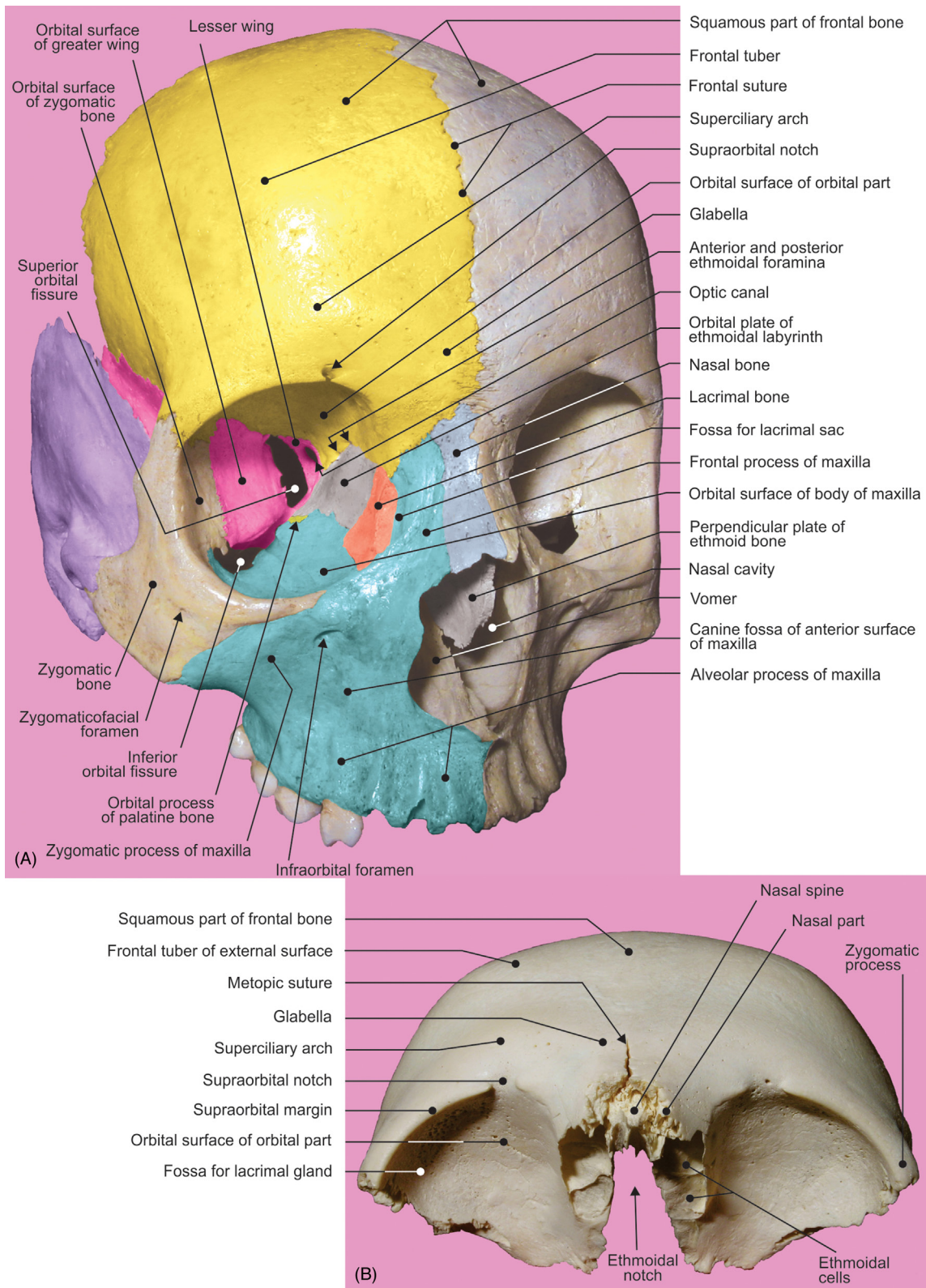


FIGURE 6.3 (A) The anterior aspect of cranial segment: frontal bone divided by persistent frontal suture. (B) The inferior aspect of the isolated frontal bone.

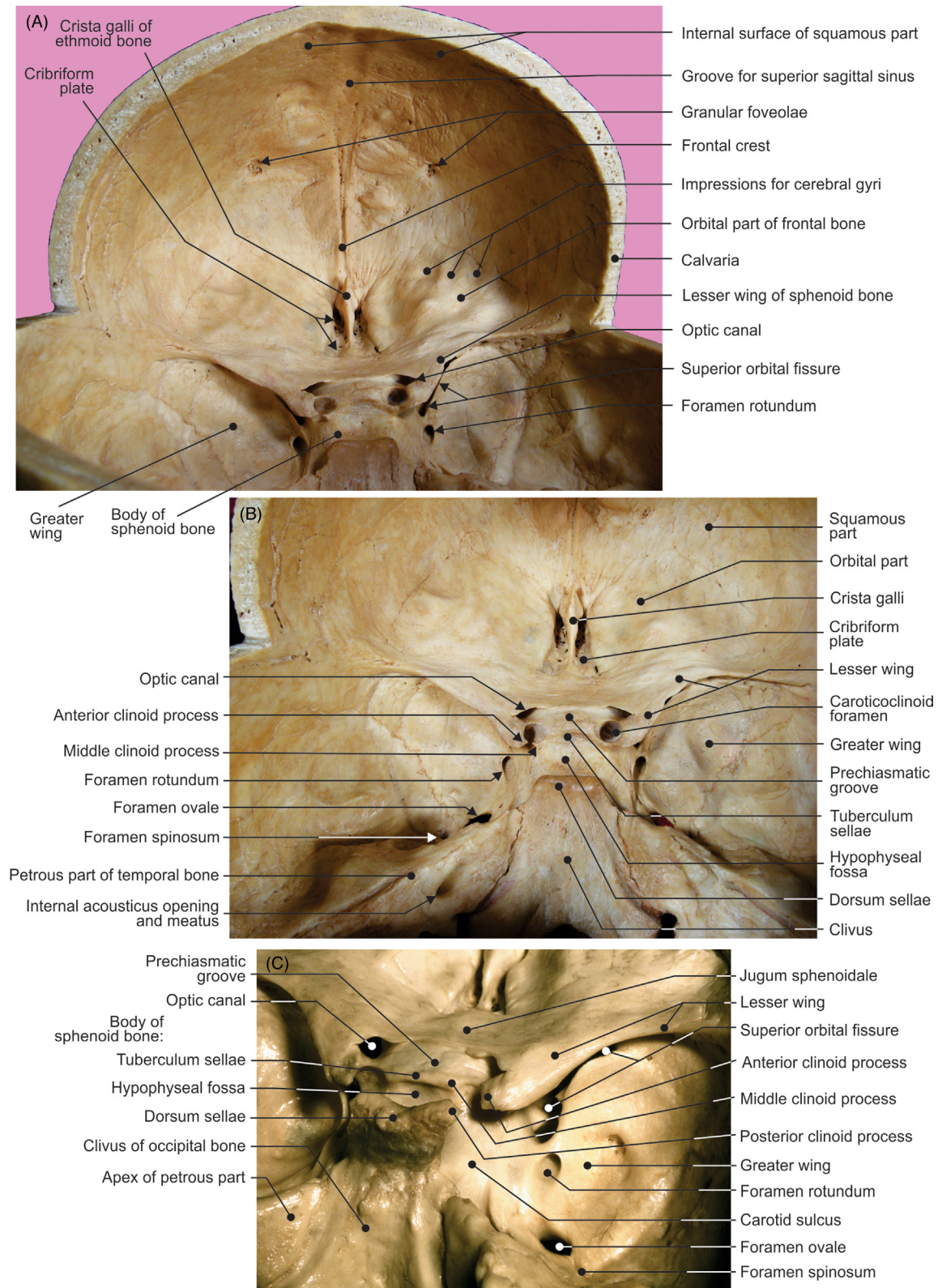


FIGURE 6.4 (A) The internal surface of the frontal bone. (B) The anterior cranial fossa and (C) middle cranial fossa.

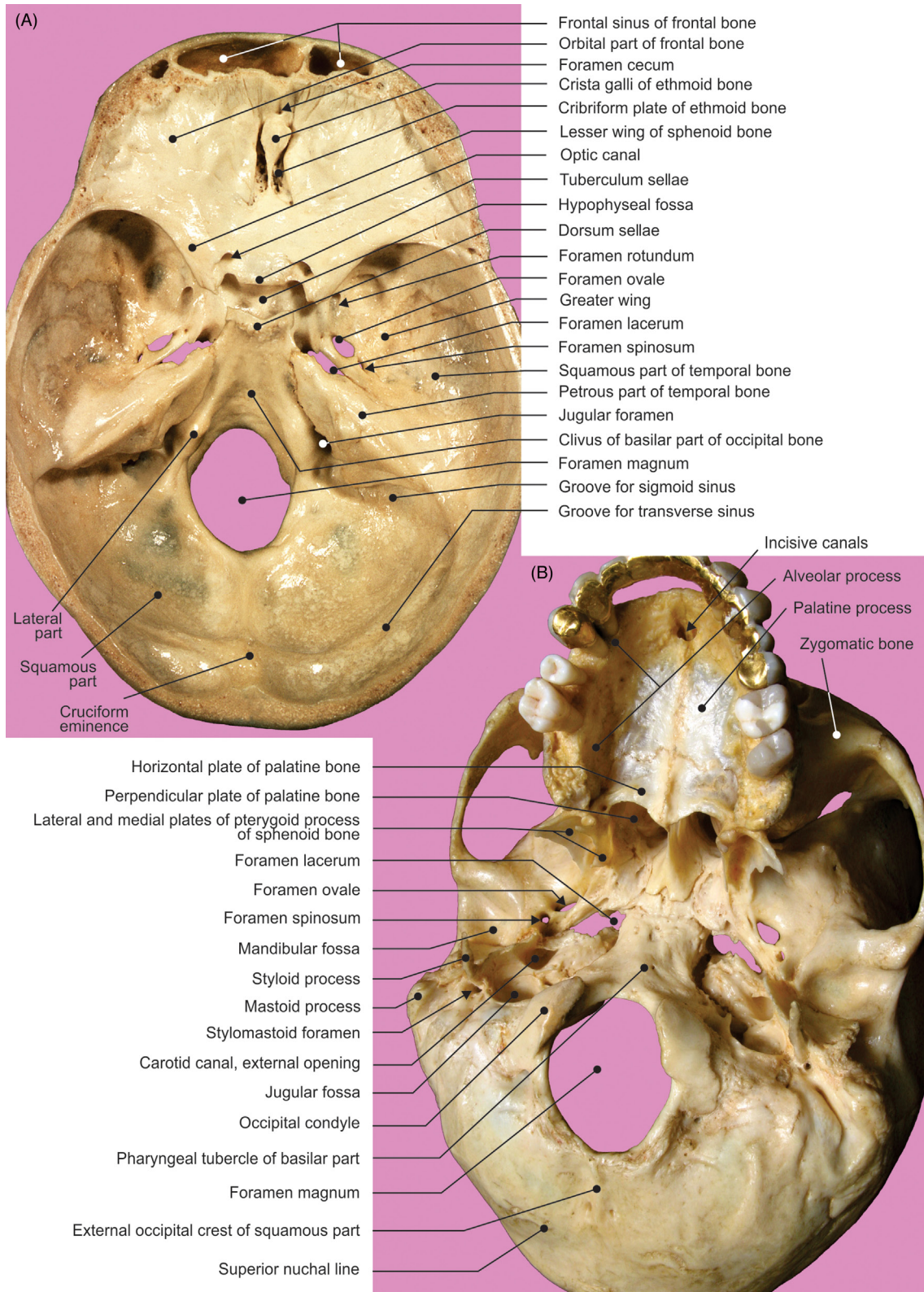


FIGURE 6.5 The cranial base. The (A) internal, superior view and (B) external, inferior view.

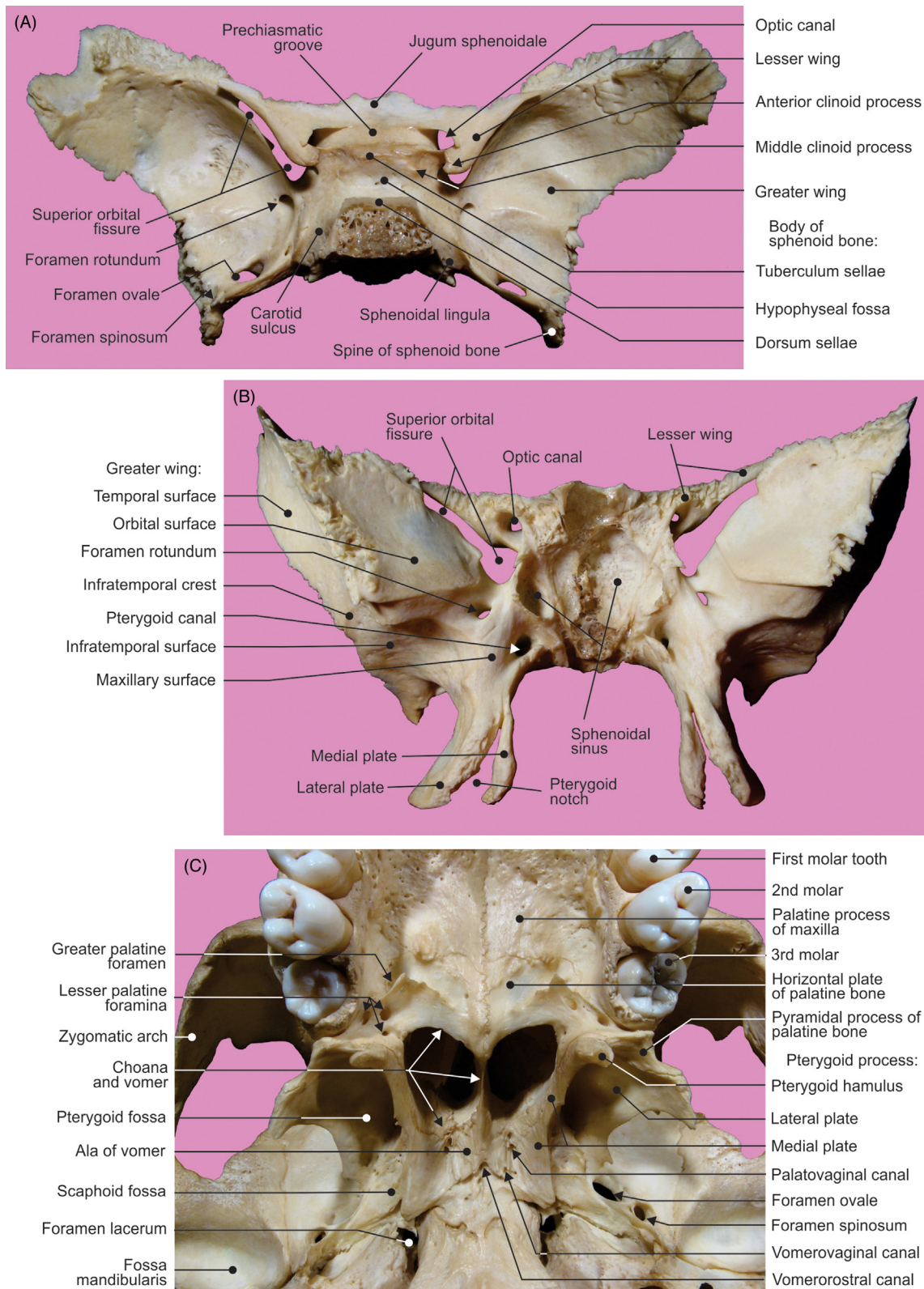


FIGURE 6.6 The isolated sphenoid bone: (A) view from above and (B) view from the front. (C) External, inferior aspect of the cranial base.

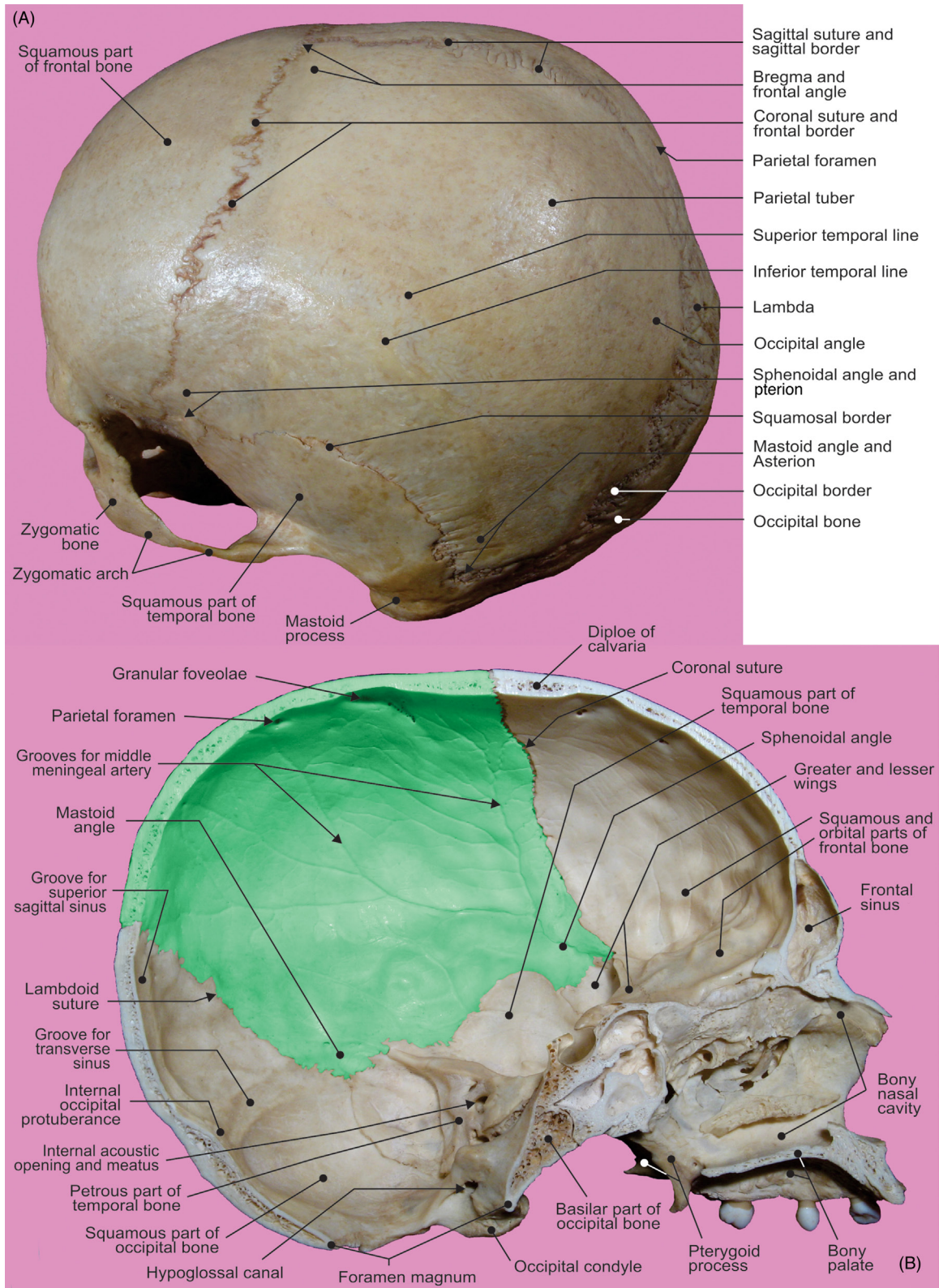


FIGURE 6.7 The (A) external and (B) internal aspects of the parietal bone.

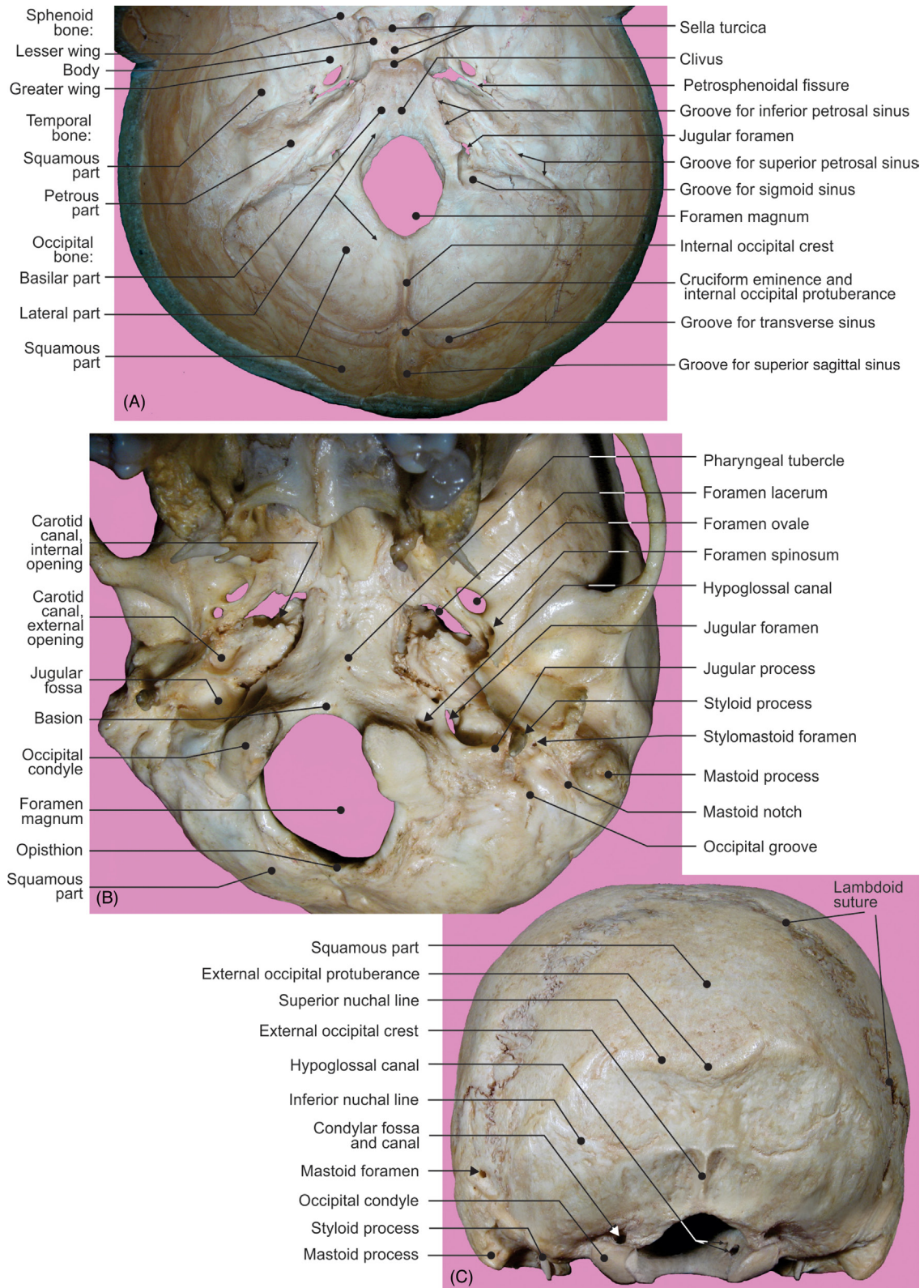


FIGURE 6.8 The occipital bone. (A) Internal aspect, view from above; (B) external aspect, view from below; and (C) external aspect, view from behind.

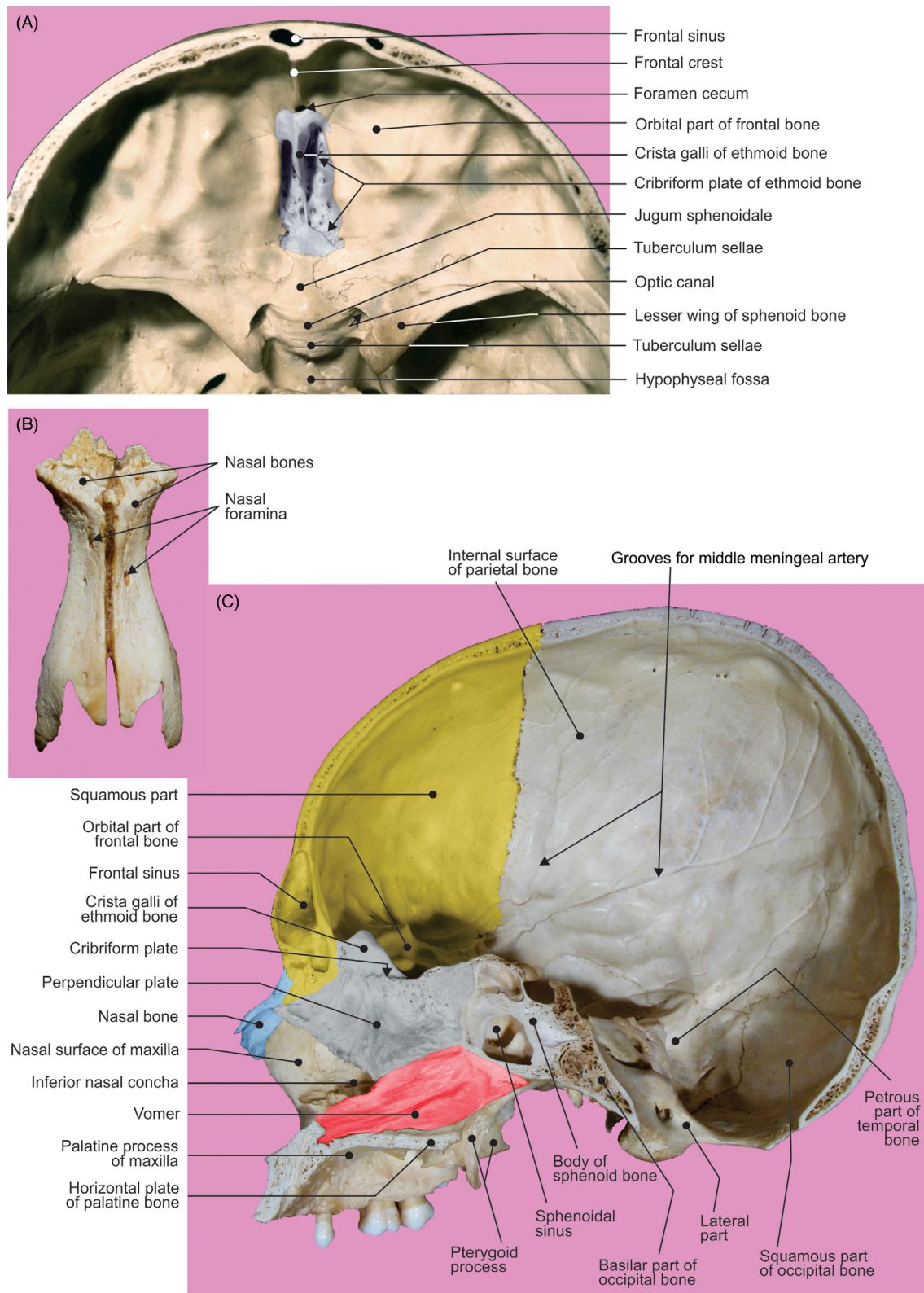


FIGURE 6.9 (A) The anterior cranial fossa. (B) Nasal bones. (C) Bony nasal septum on sagittally sectioned cranium.

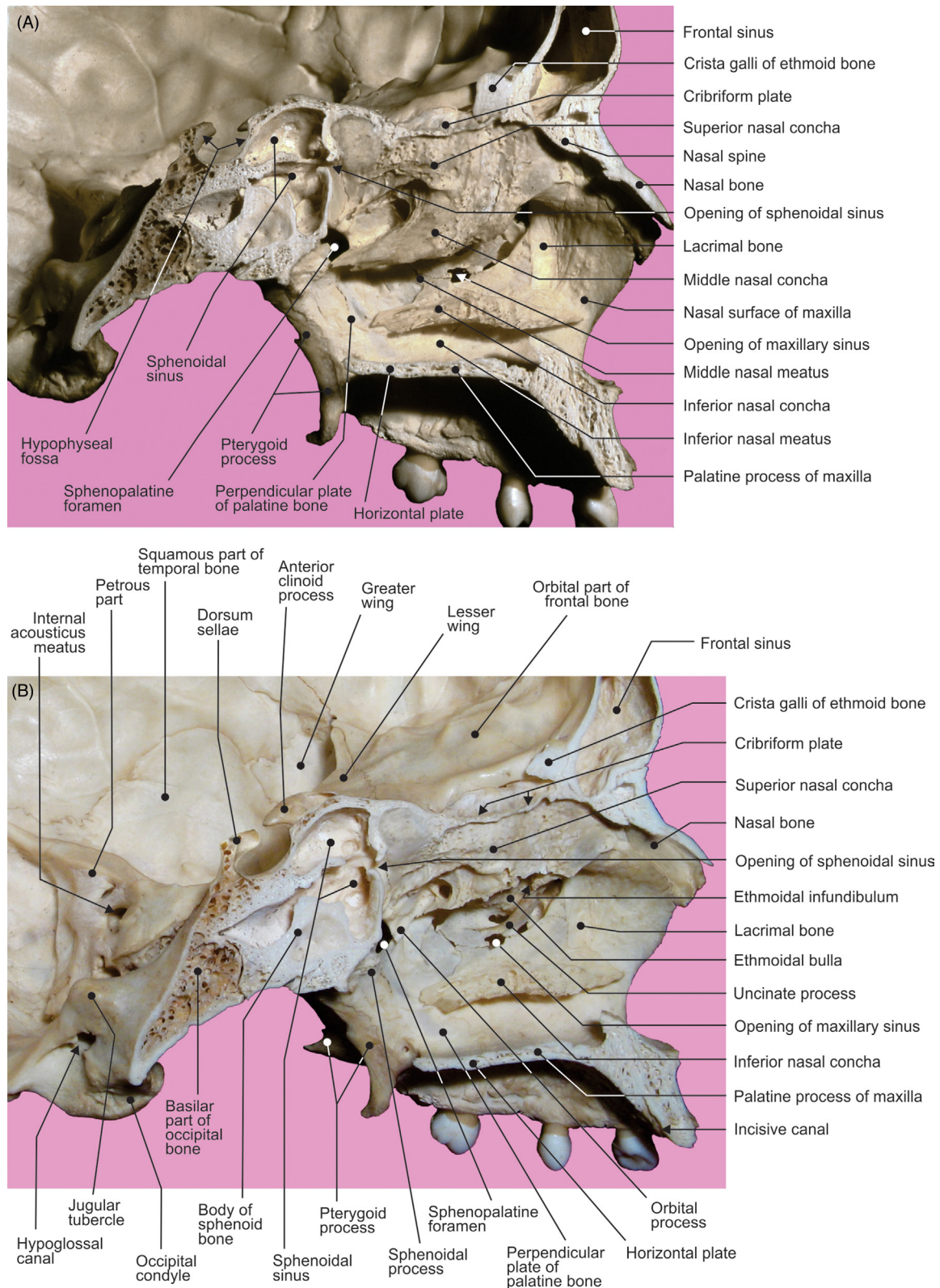


FIGURE 6.10 (A–B) Different views displaying the midsagittal sections of the bony nasal cavity.

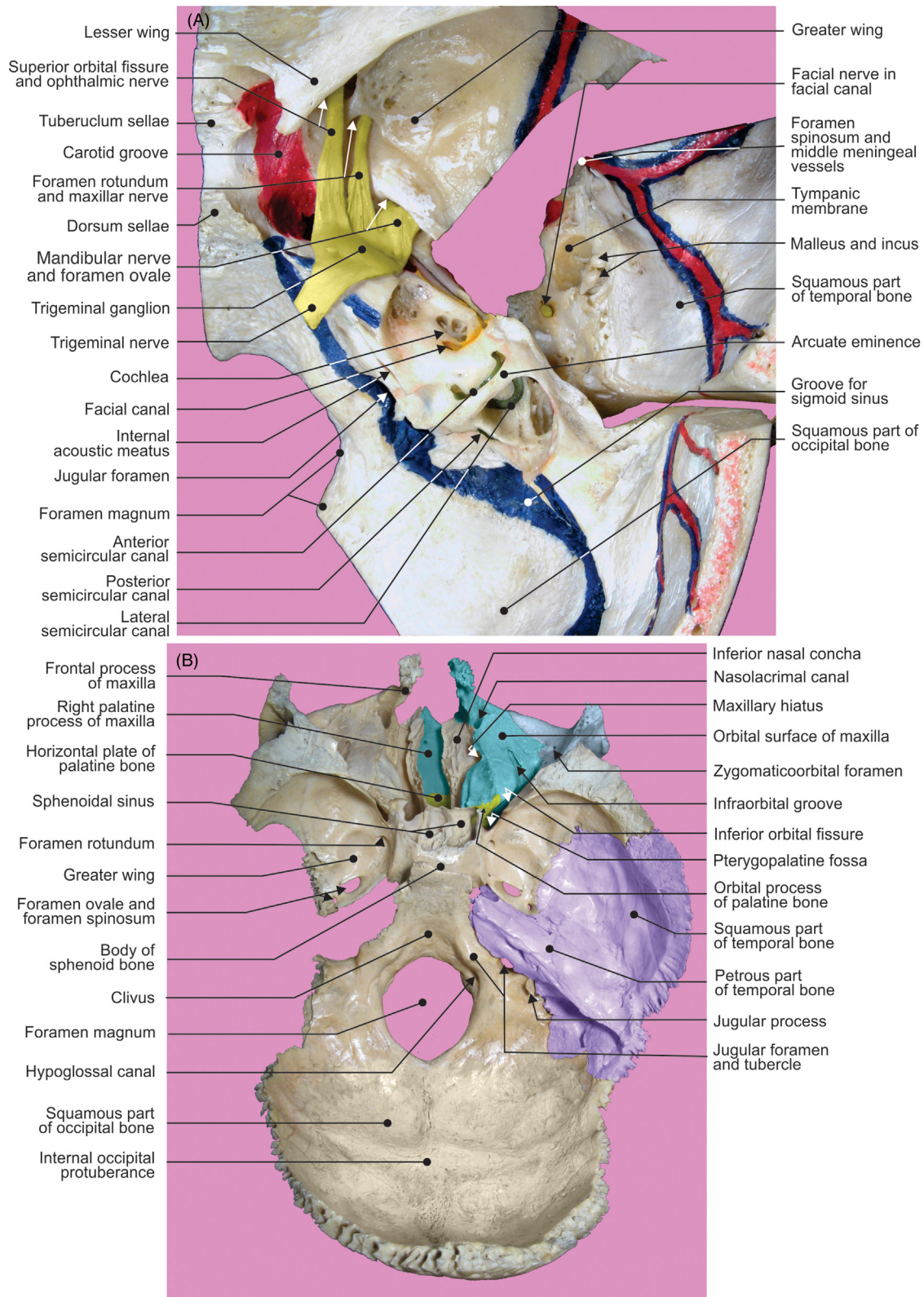


FIGURE 6.11 (A) View from the above of section and dissection of the temporal bone. (B) The internal aspect of the cranial base. Following bones were removed: frontal, ethmoid, part of sphenoid, left temporal, parietal, and small facial.

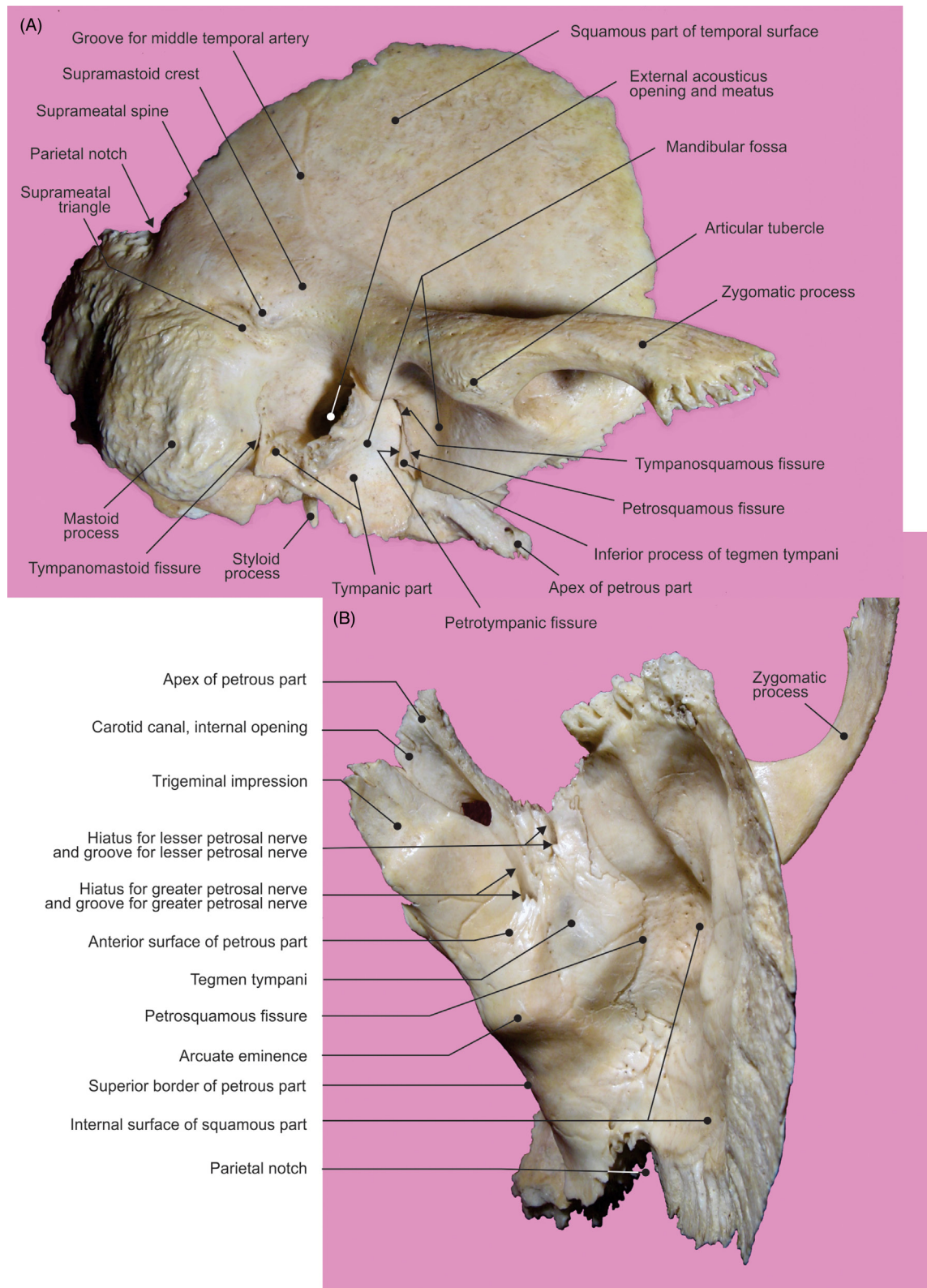


FIGURE 6.12 The isolated right temporal bone. (A) View from lateral side and (B) from above.

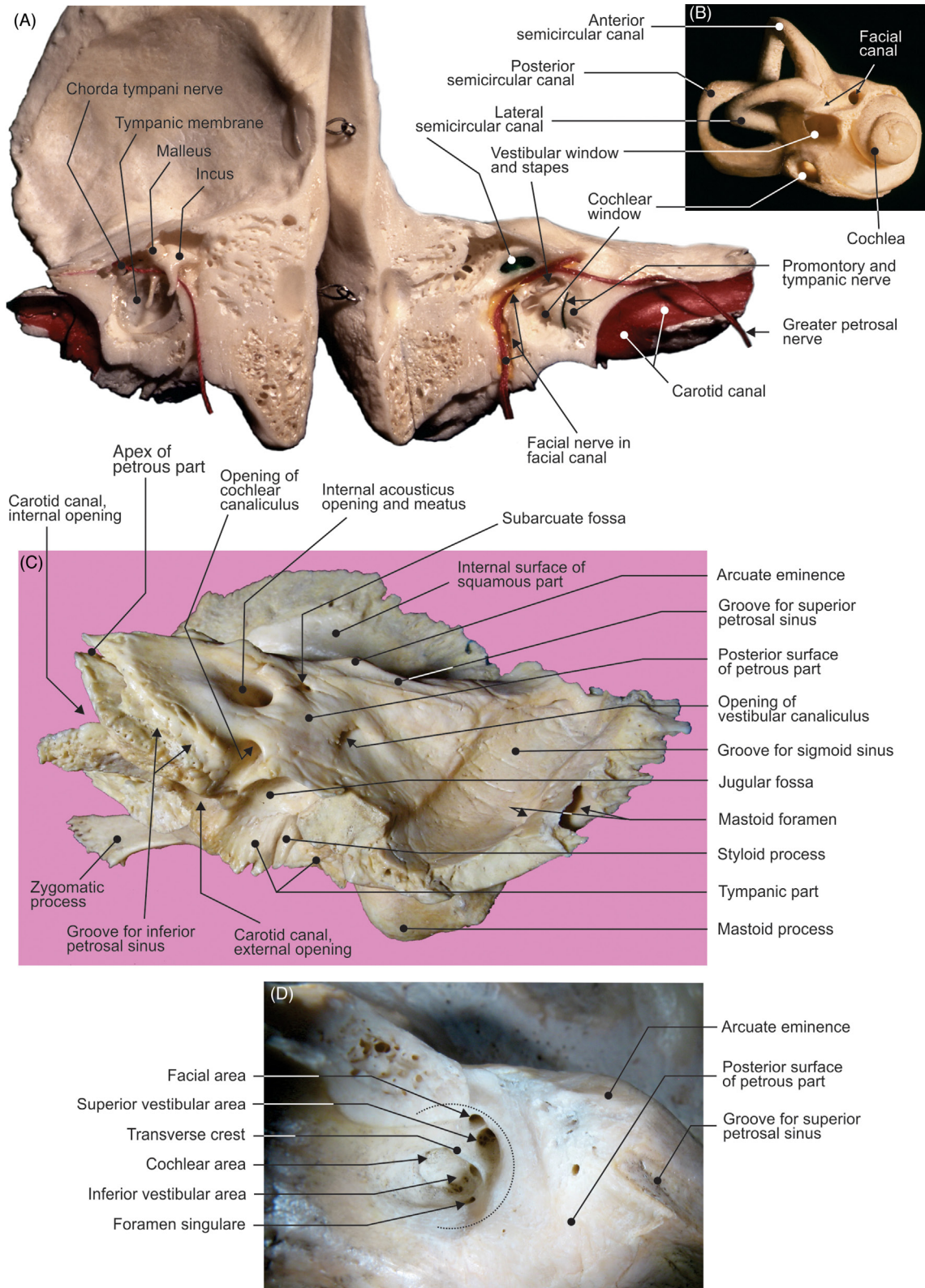


FIGURE 6.13 (A) The longitudinal section of temporal bone and (B) isolated bony labyrinth. (C) Internal, cranial aspect of isolated right temporal bone. (D) Dissection of fundus of the right internal acoustic meatus.

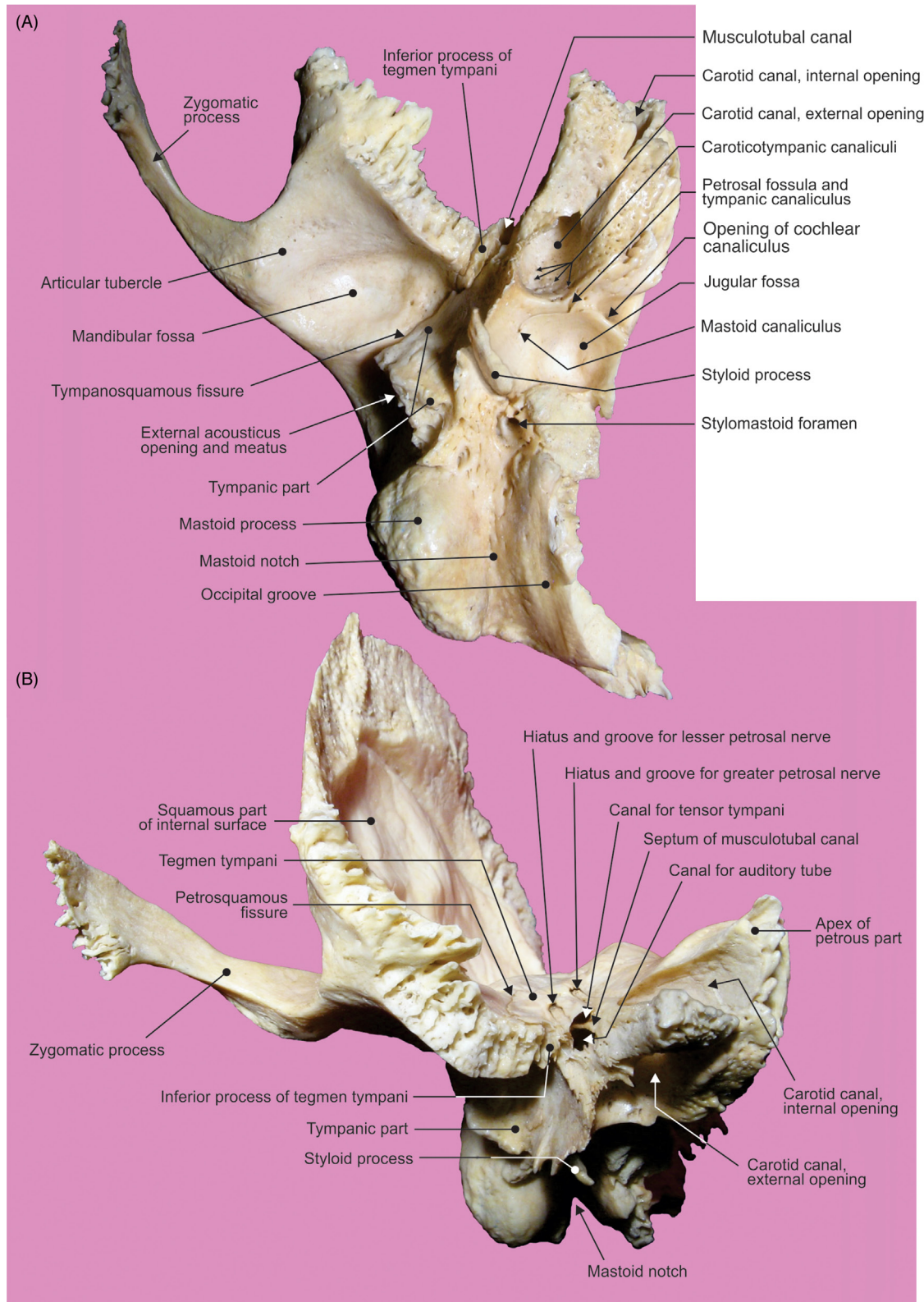


FIGURE 6.14 The right temporal bone. (A) View from below and (B) from the front.

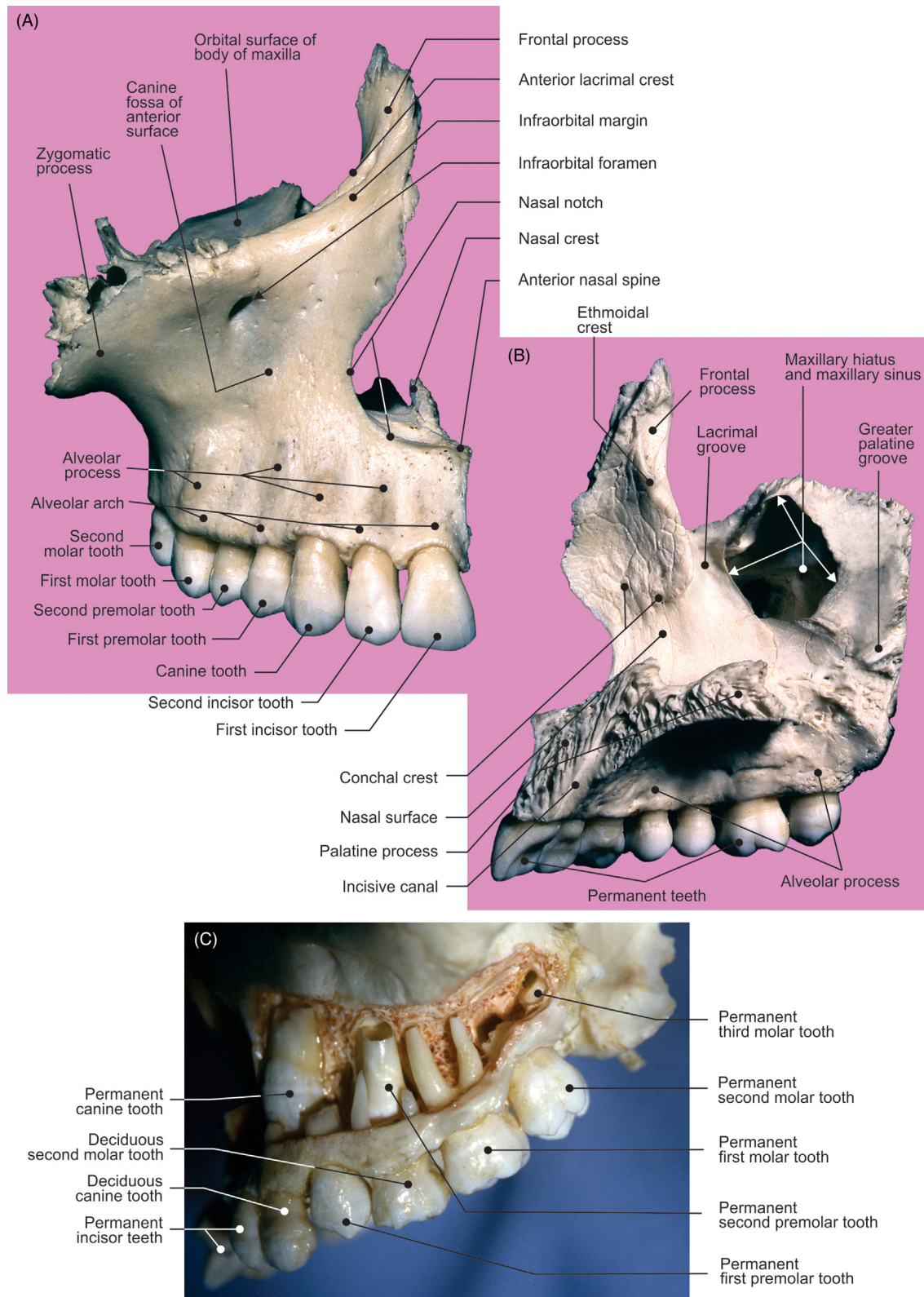


FIGURE 6.15 The maxilla. (A) View from the front and (B) from the internal side. (C) Maxillary dental arch.

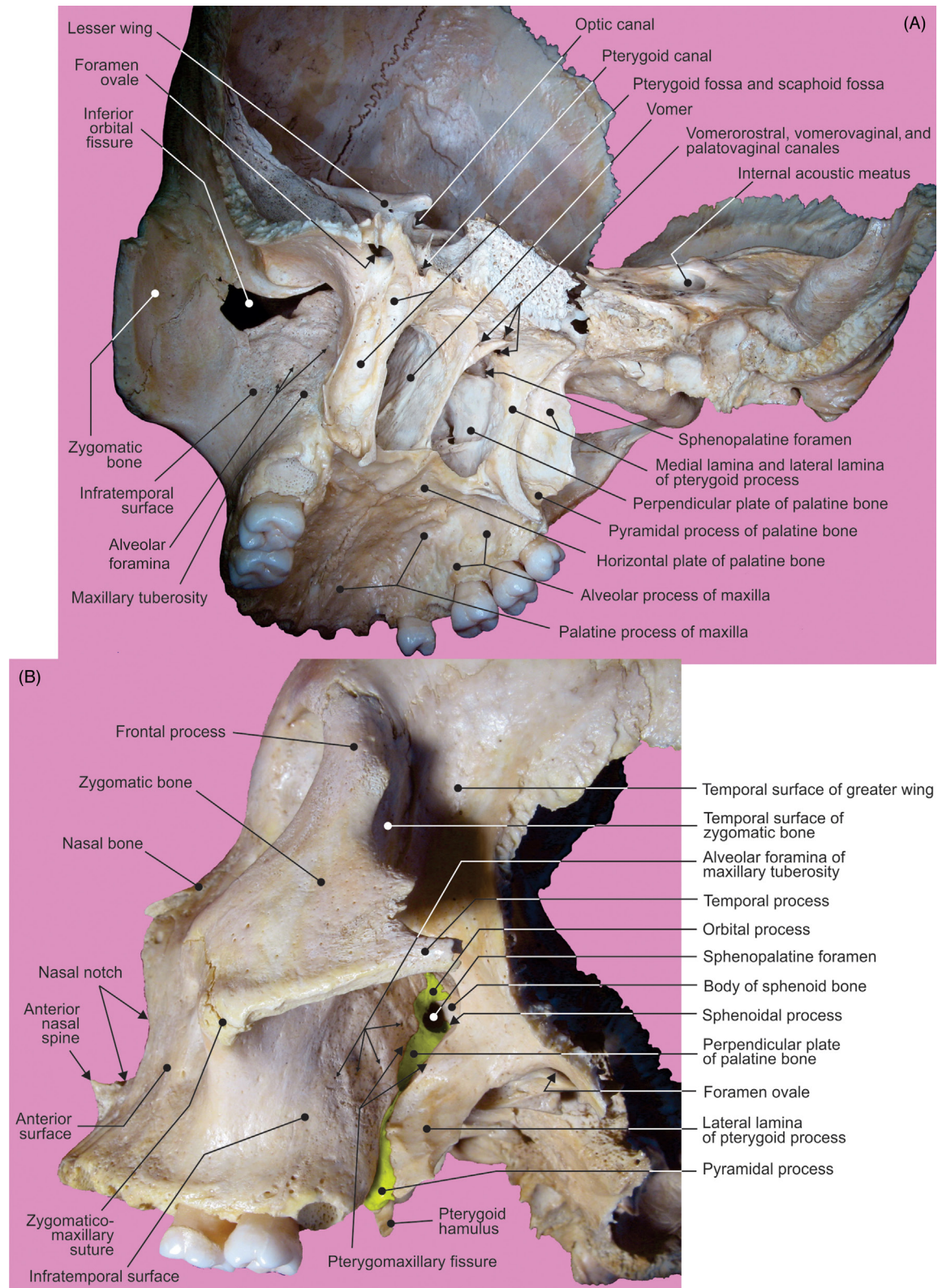


FIGURE 6.16 The palatine bone. (A) View from behind. (B) Pterygopalatine, or sphenopalatine fossa.

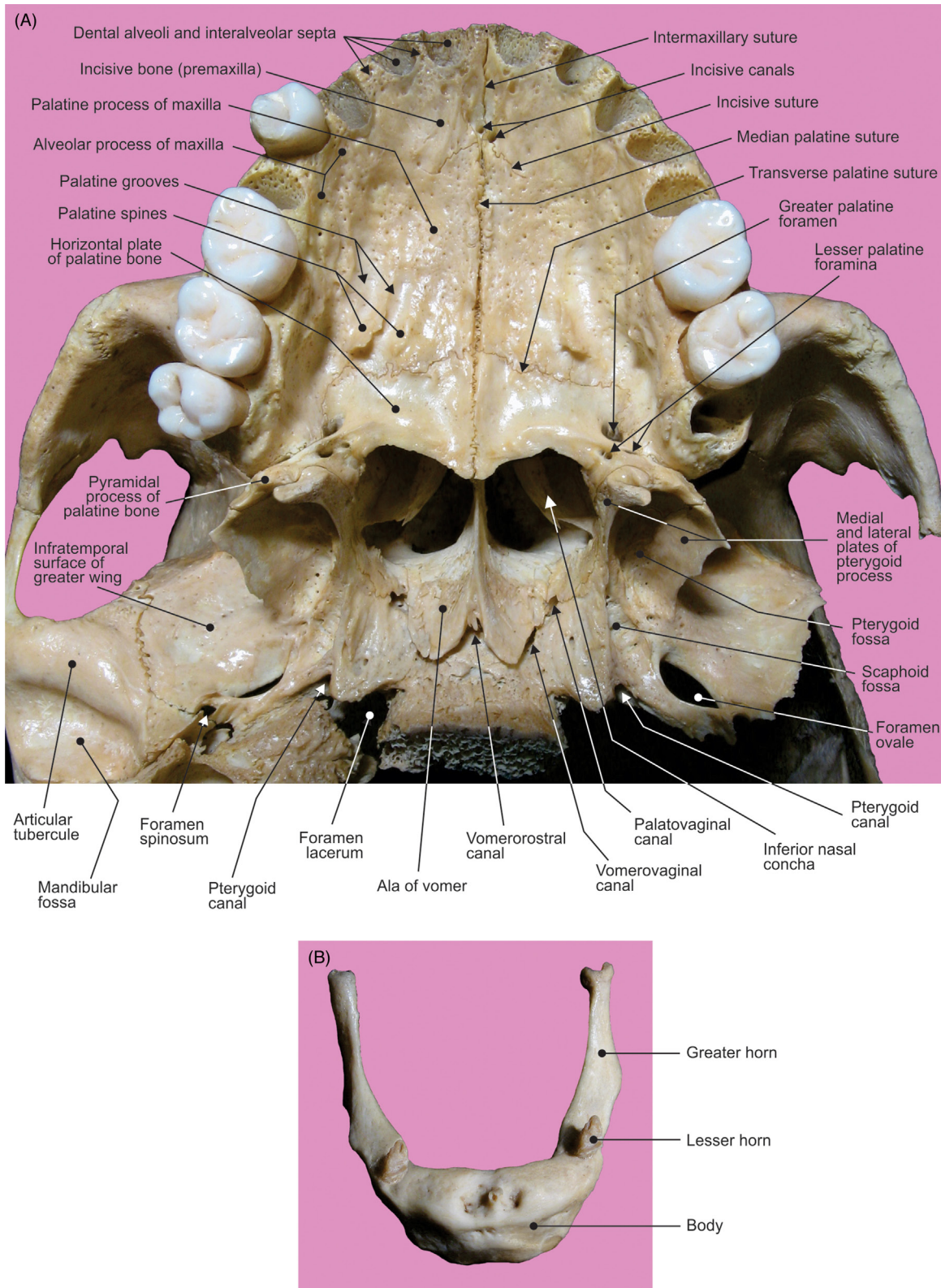


FIGURE 6.17 (A) Inferior view of the bony, hard palate. (B) Superior view of the hyoid bone.

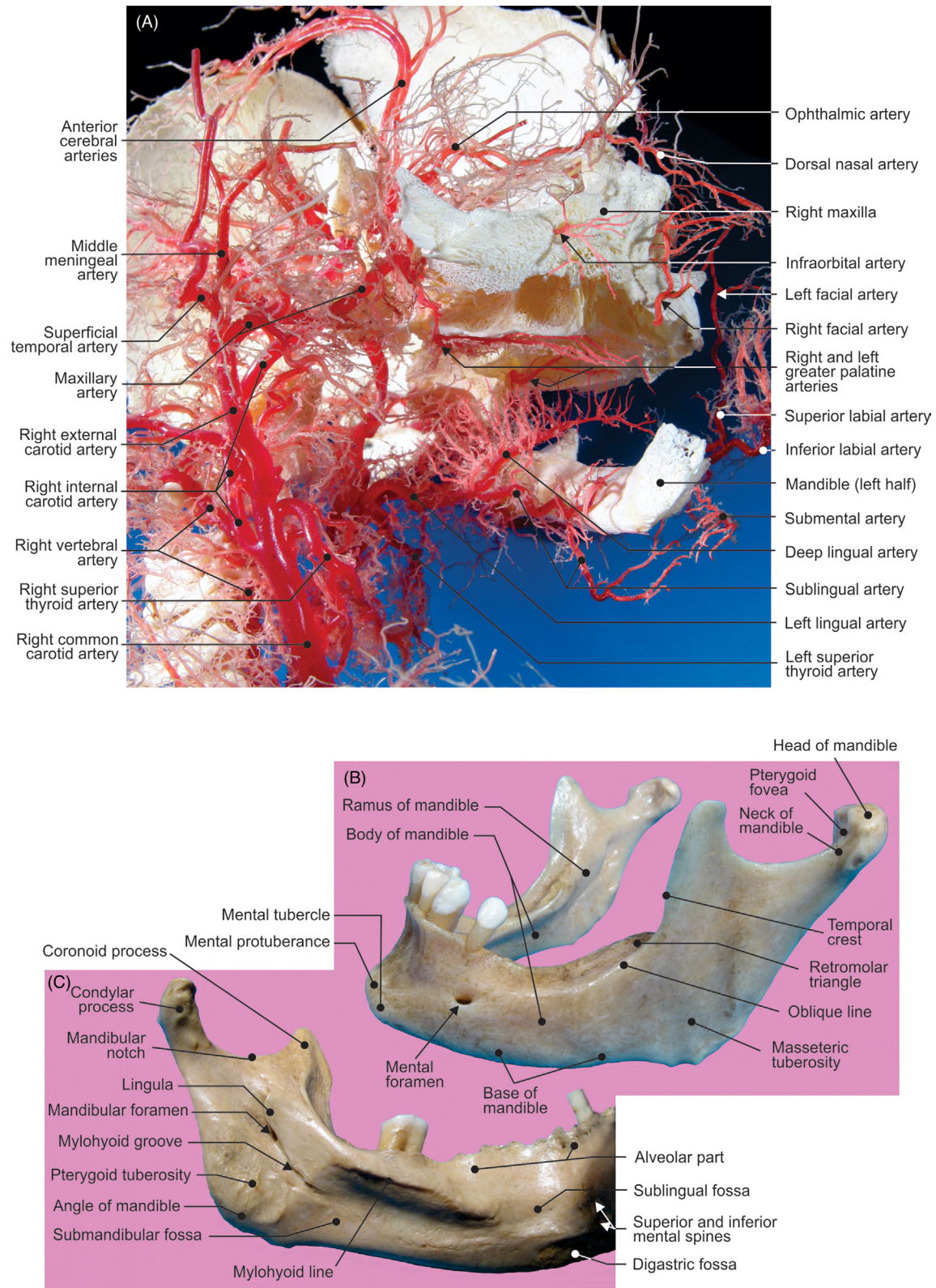


FIGURE 6.18 (A) The fetal arteries of the head and neck: inferior view from the right side. (B–C) Mandible: view of the external and internal side.

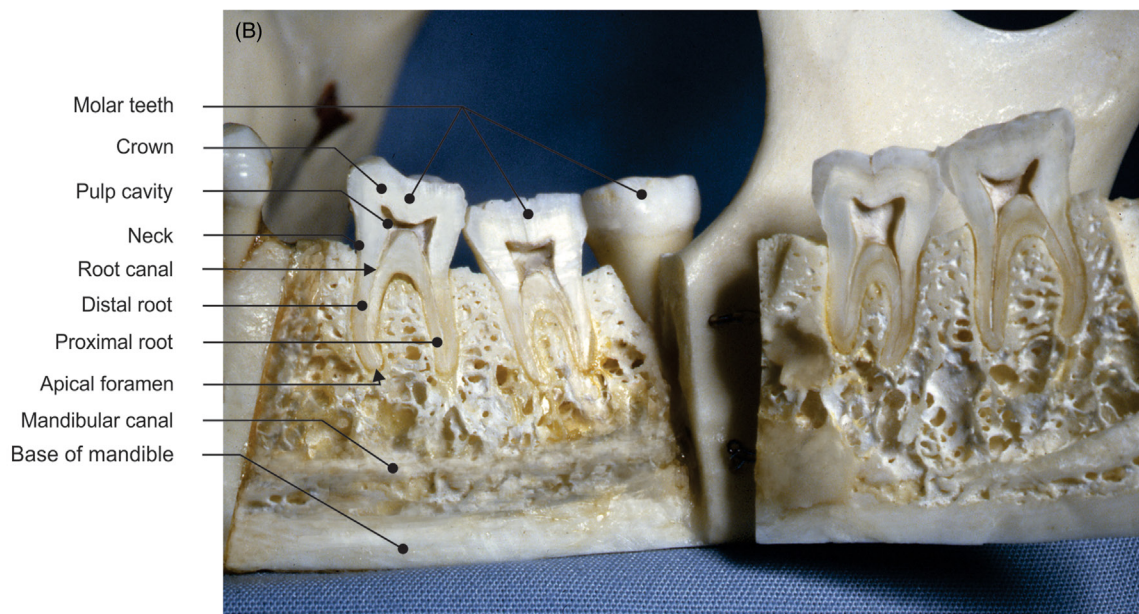
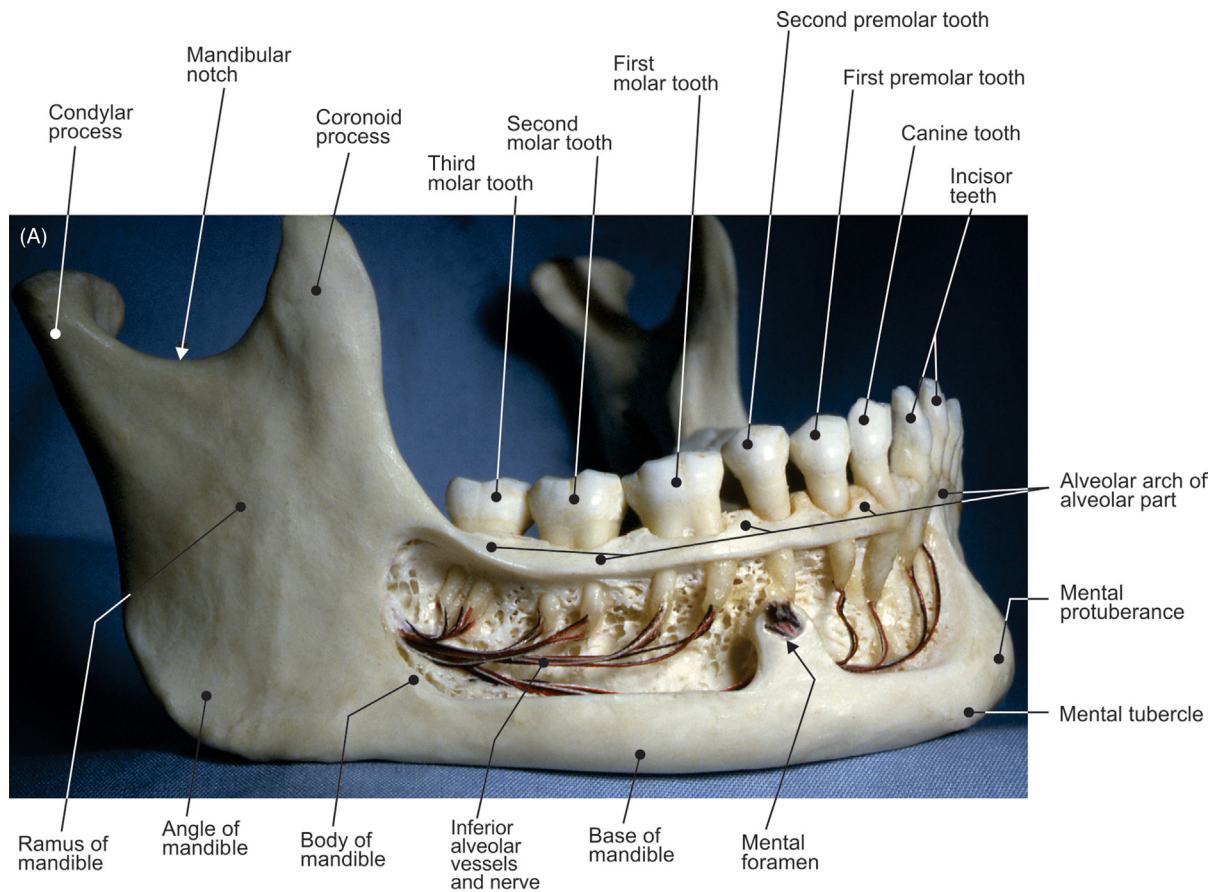


FIGURE 6.19 The mandible. (A) Dental arch and (B) sagittal section of the molar region.

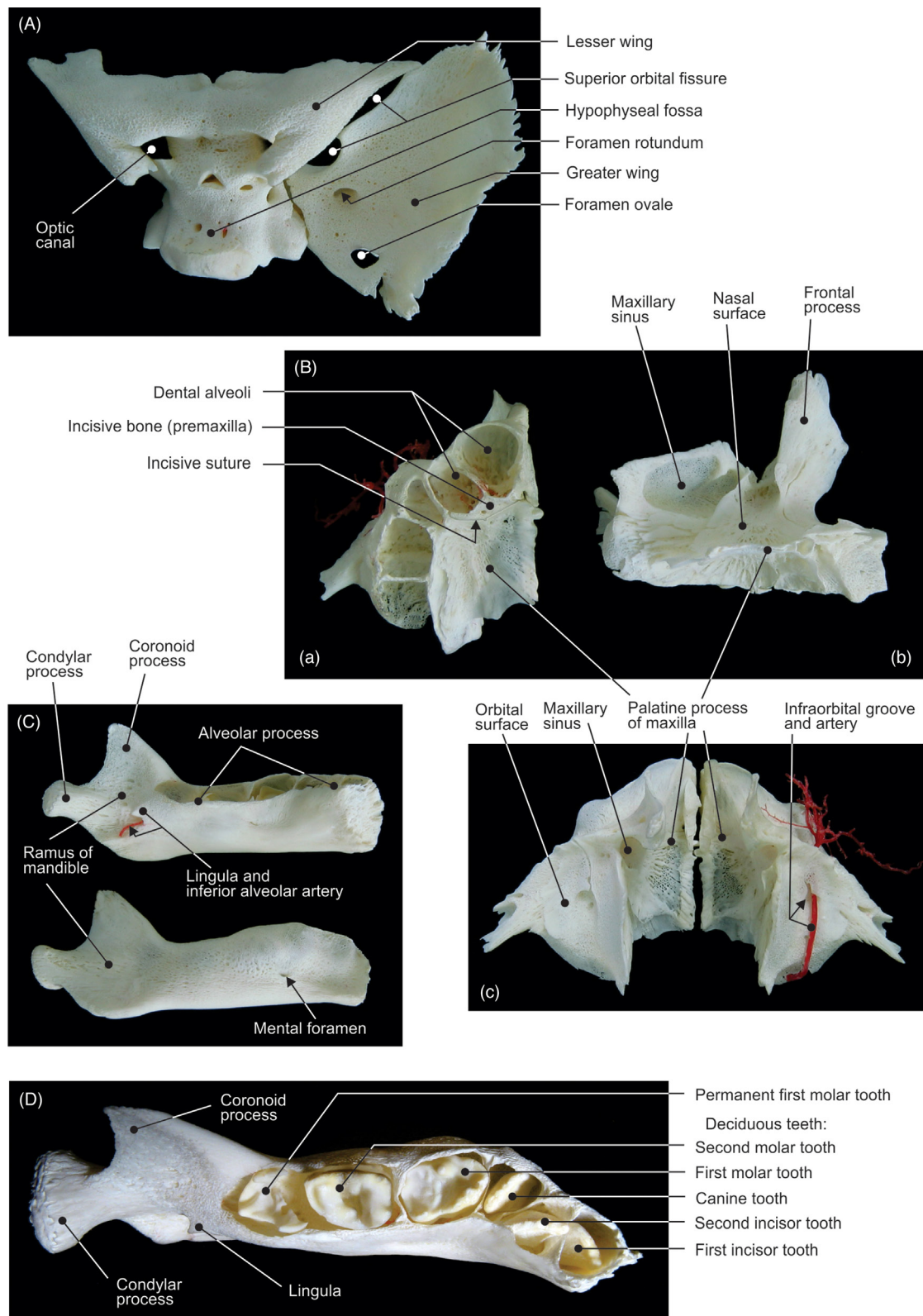


FIGURE 6.20 (A) Fetal sphenoid bone: superior view. (B) Fetal maxilla: (a) inferior, (b) internal, and (c) superior views. (C–D) Different views of the fetal mandible.

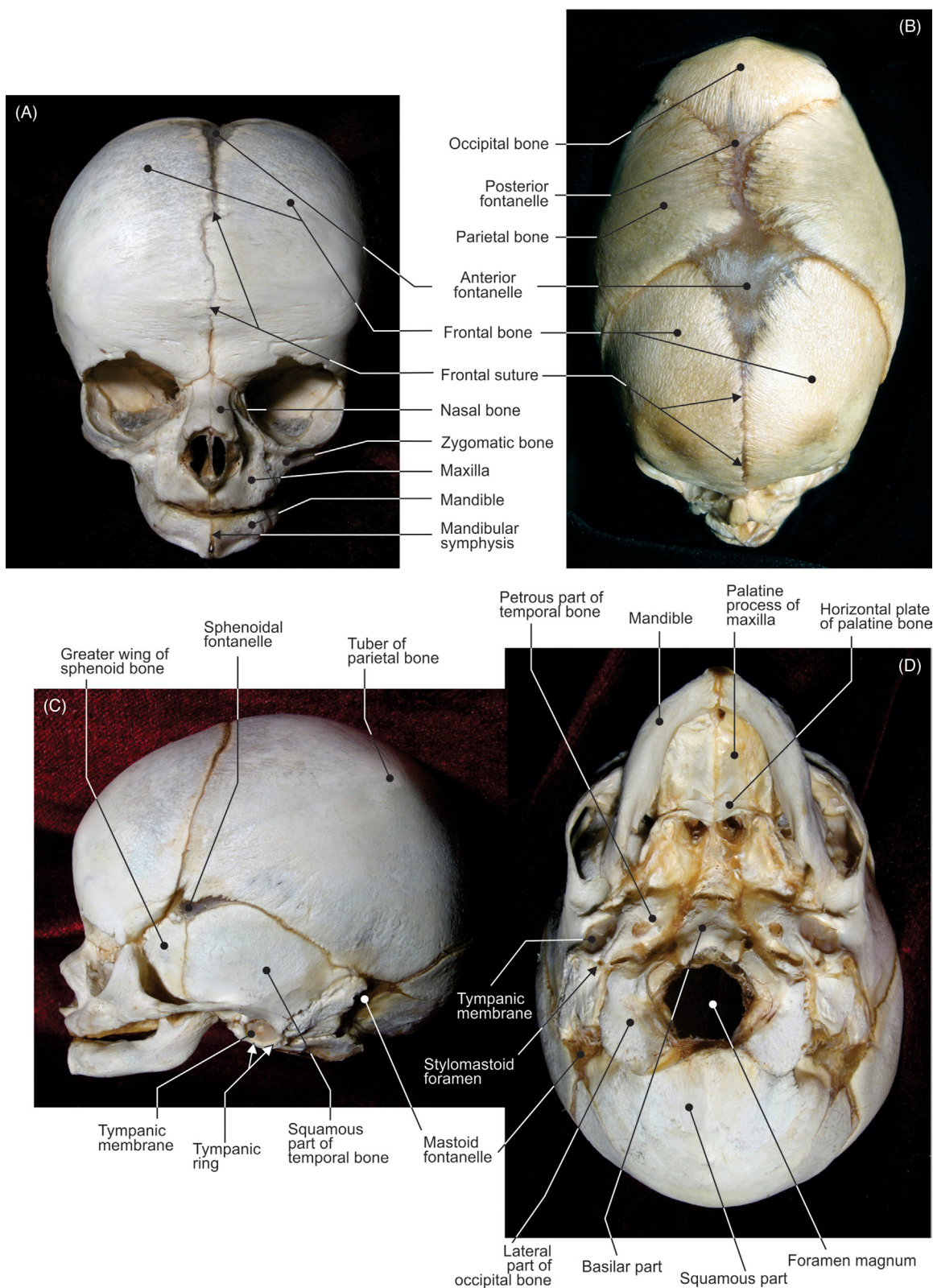


FIGURE 6.21 The fetal skull with mandible. (A) View from the front, (B) from above, (C) from the left lateral side, and (D) from below.

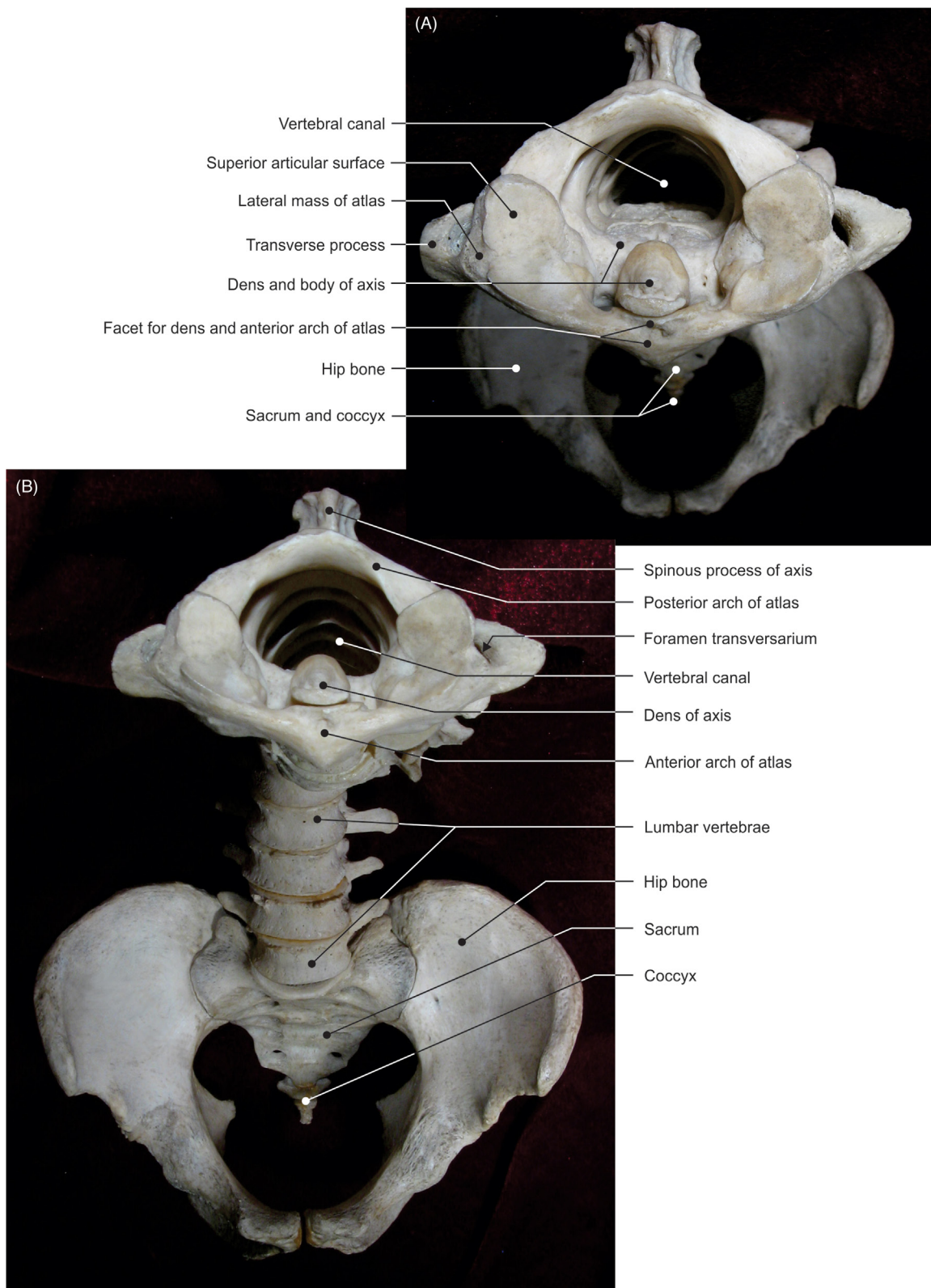


FIGURE 6.22 The vertebral column. (A) View from above and (B) from the front.

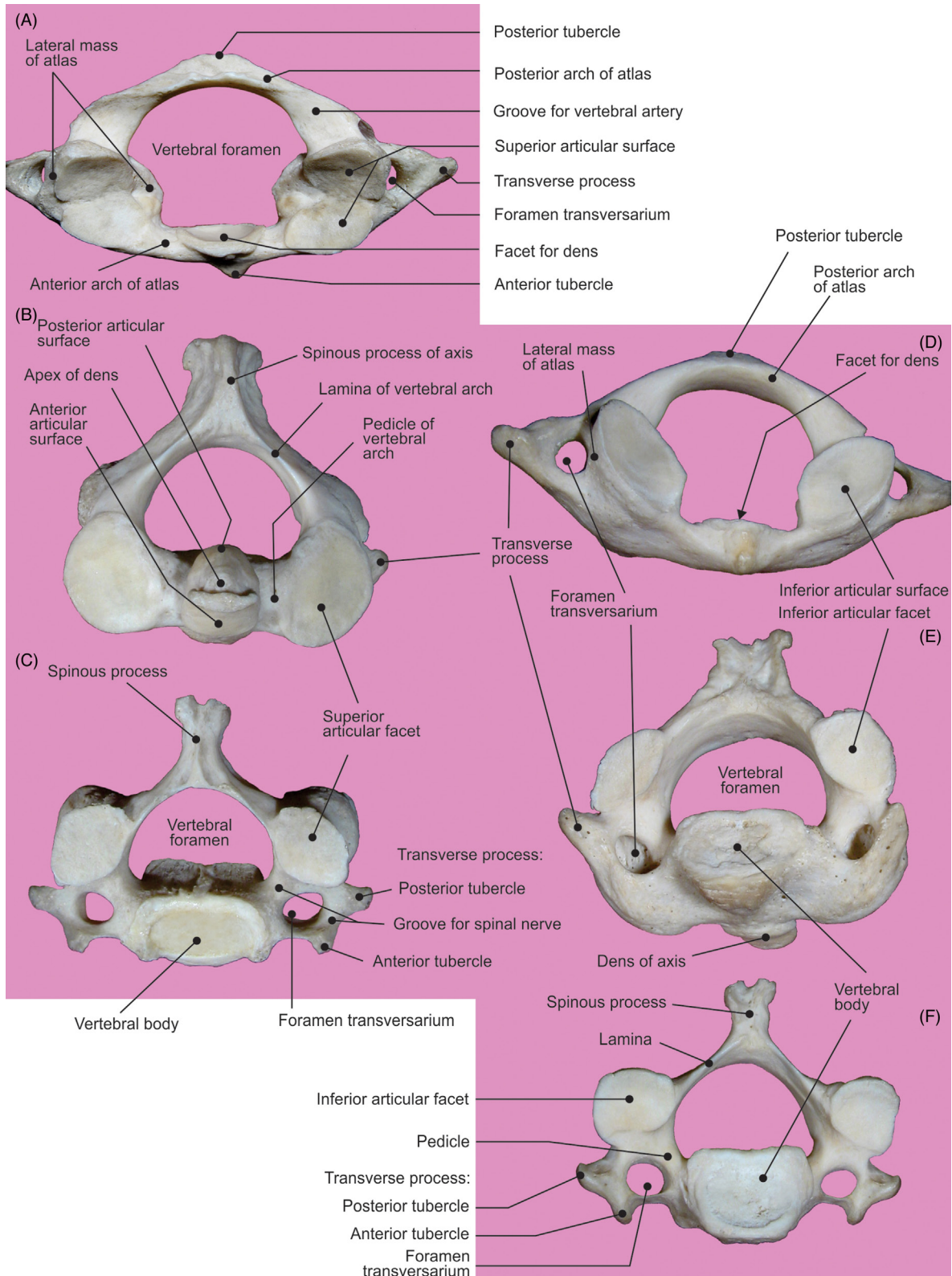


FIGURE 6.23 Atlas, axis, and C3 vertebra. (A–C) Views from above and (D–F) from below.

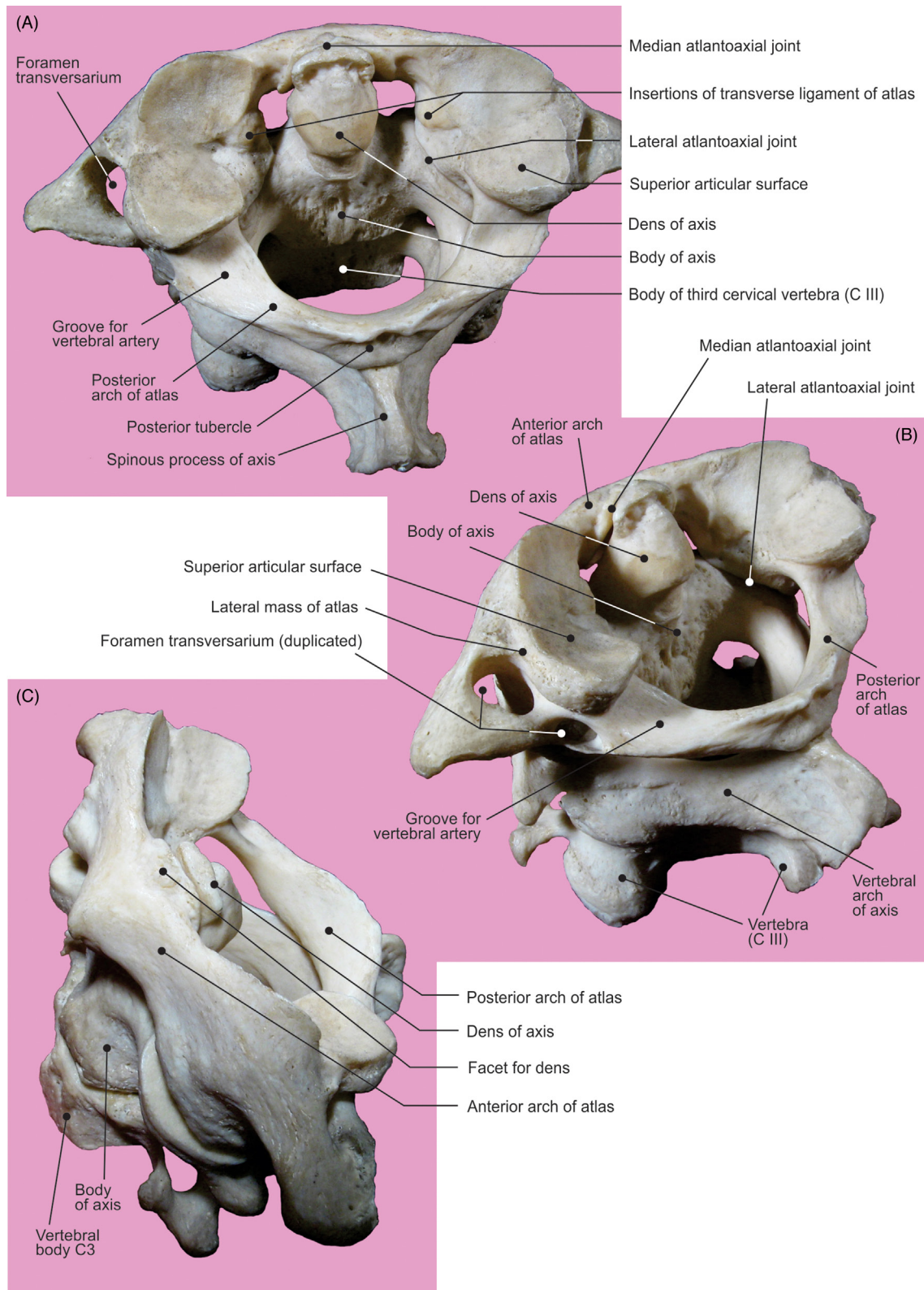


FIGURE 6.24 Atlas, axis, and vertebra C3. (A) View from behind and (B–C) from the left lateral side.

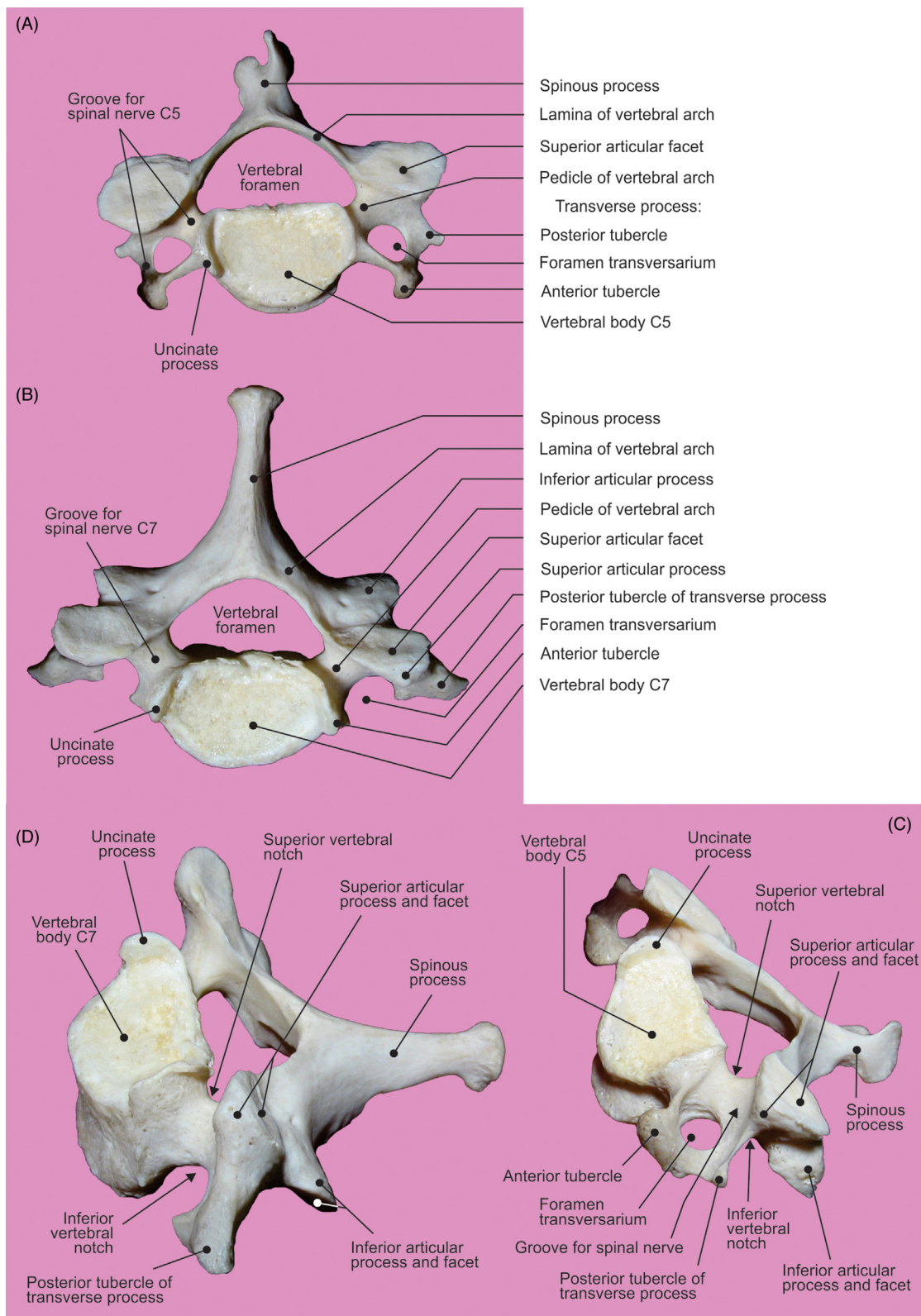


FIGURE 6.25 Vertebrae C5 and C7. (A–B) View from above and (C–D) from the left lateral side.

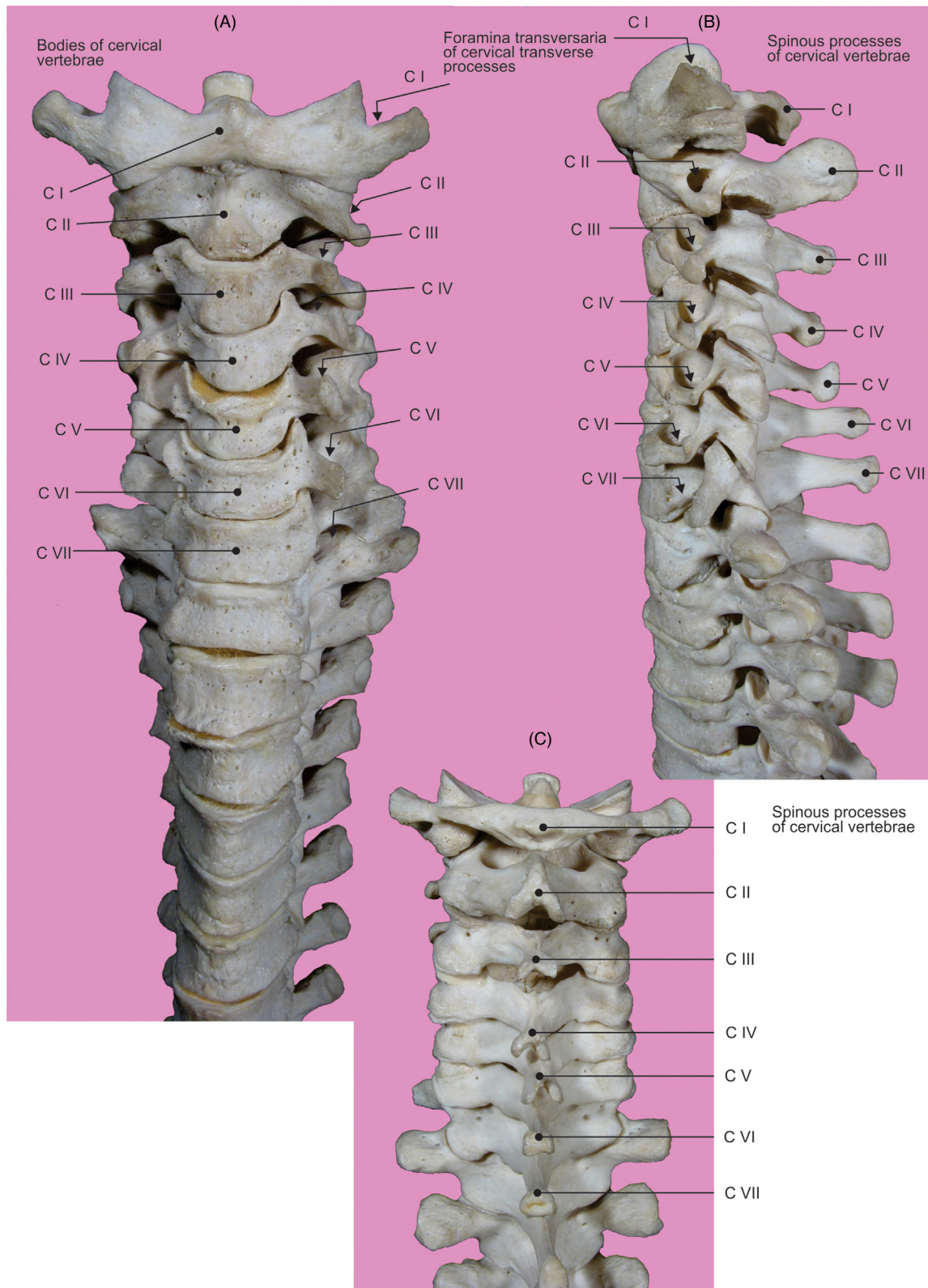


FIGURE 6.26 The cervical vertebral column. (A) View from the front, (B) from the left lateral side, and (C) from behind.

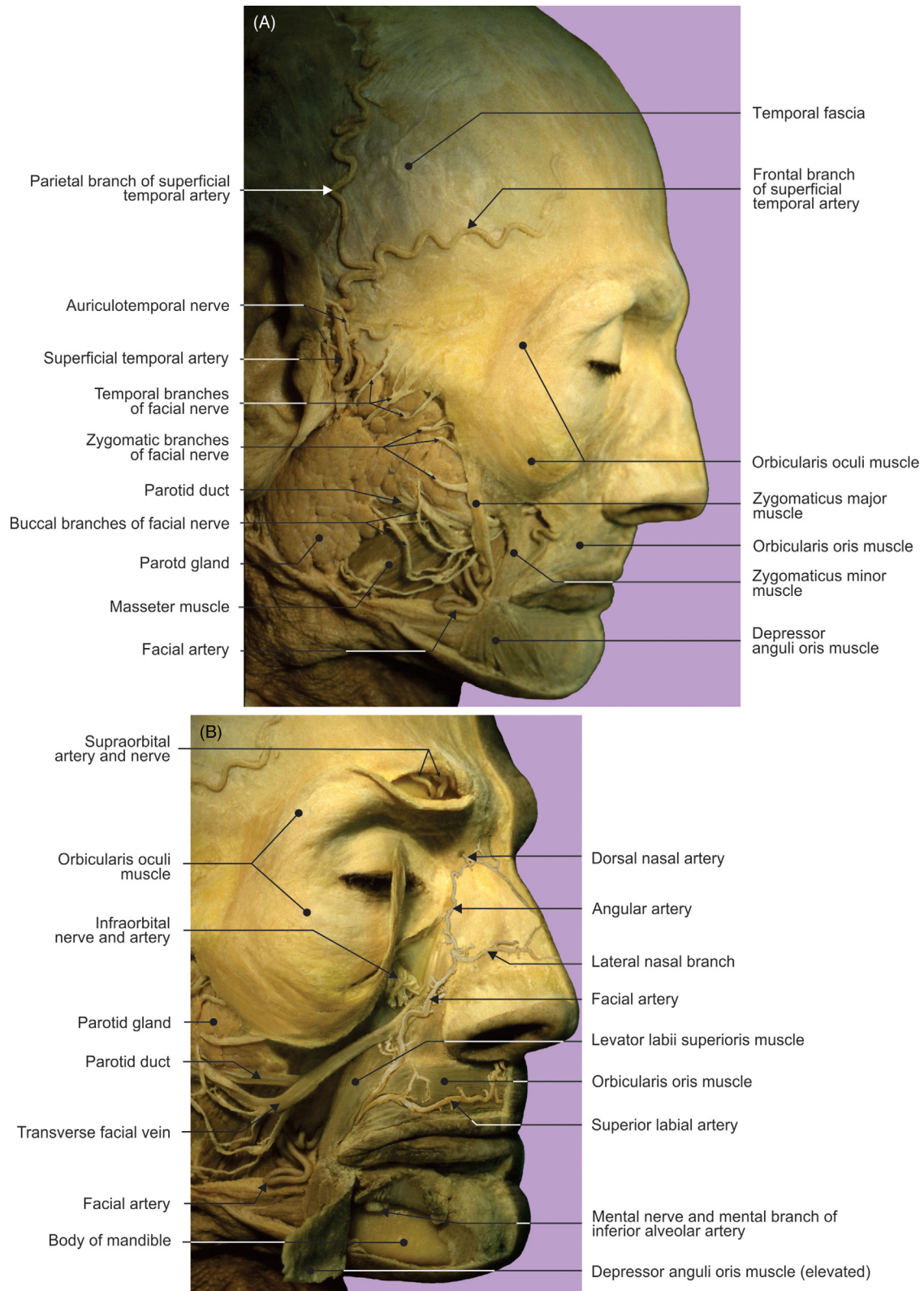


FIGURE 6.27 The facial and parotid regions. (A) Superficial muscular layer and (A–B) nerves and blood vessels.

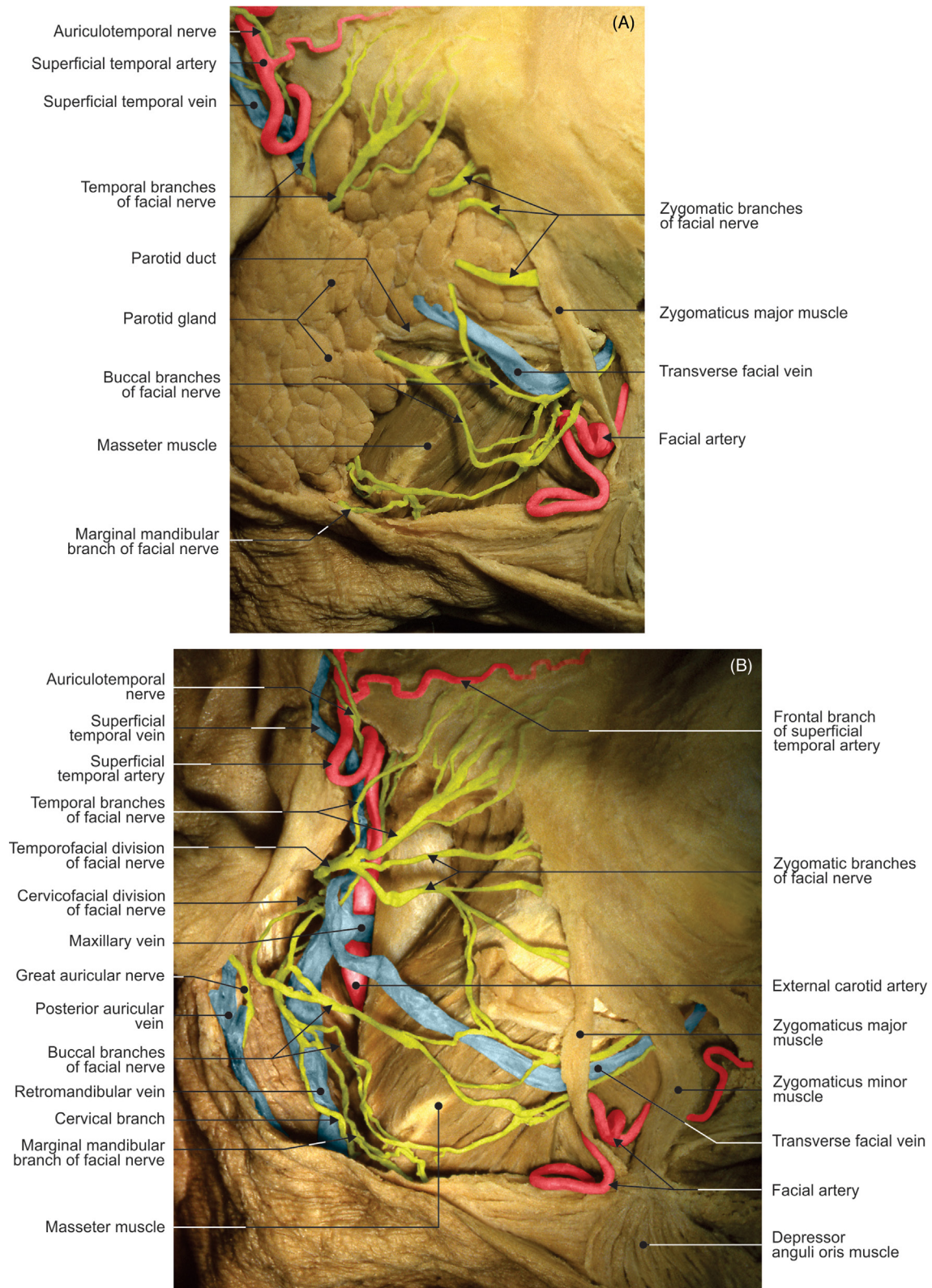


FIGURE 6.28 The parotidomasseteric region. (A) With parotid gland and (B) after the gland has been removed.

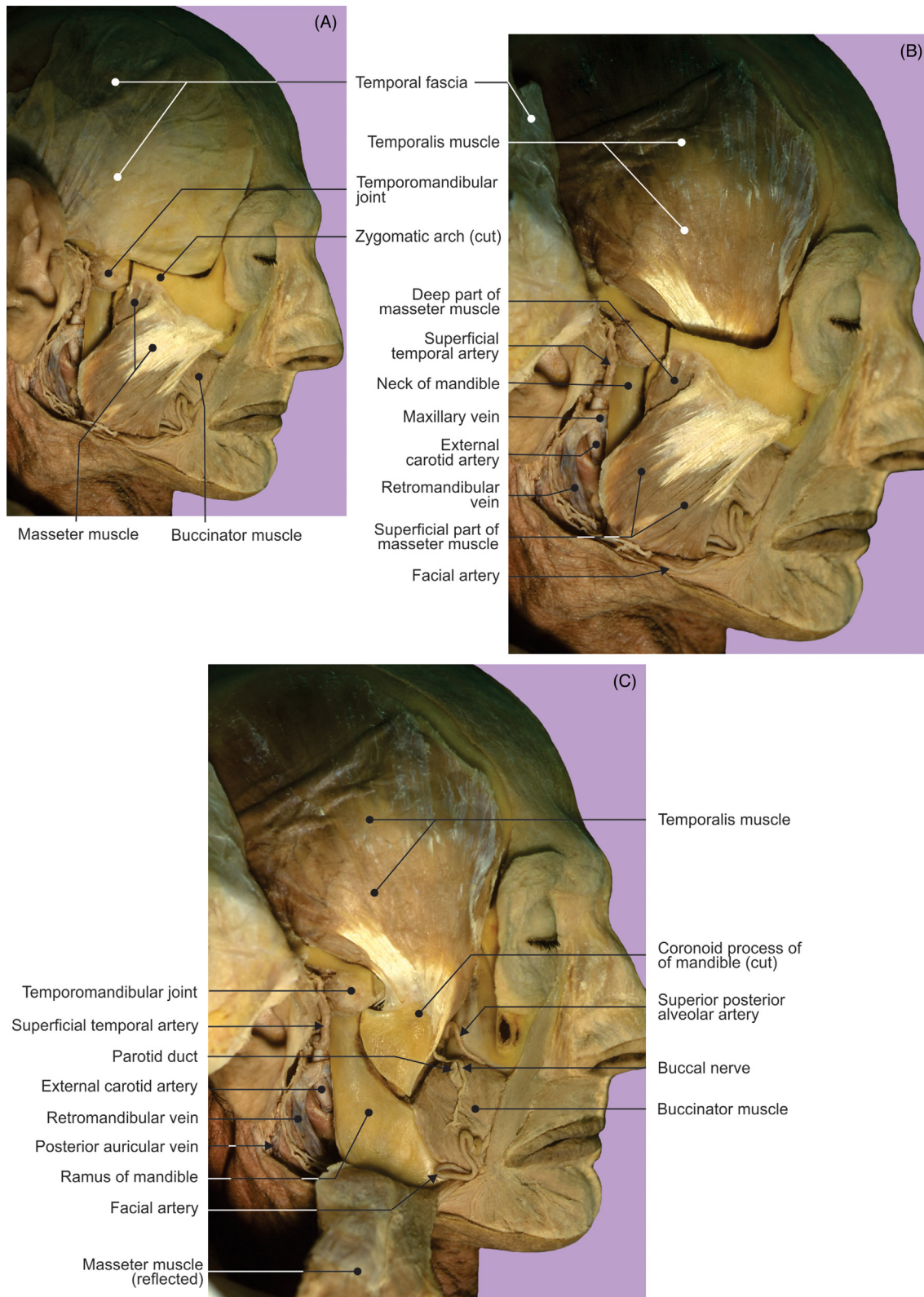


FIGURE 6.29 The muscles of mastication. (A) Masseter and (B–C) temporalis.

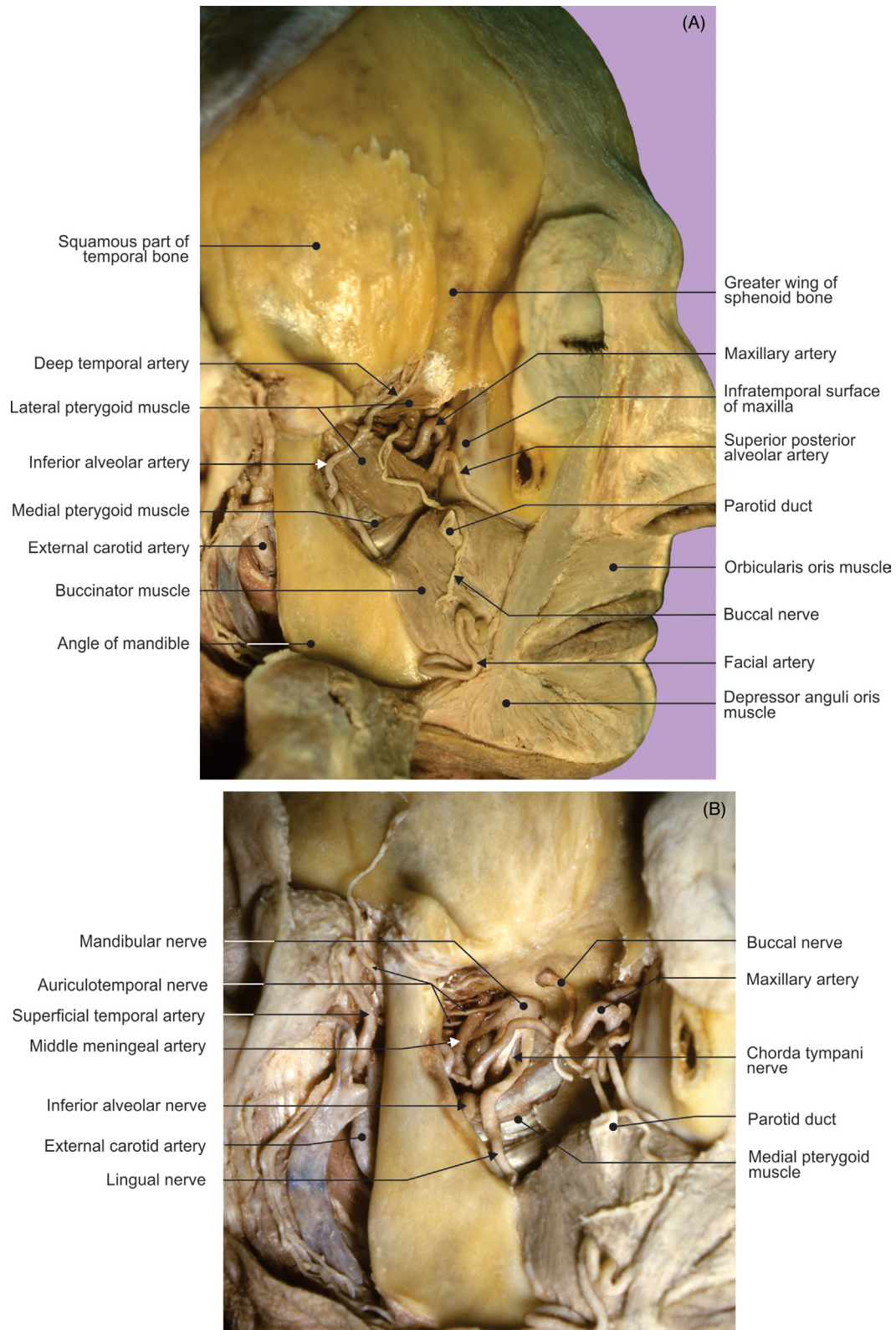


FIGURE 6.30 The infratemporal fossa. (A) Structures in superficial and (B) deep layers.

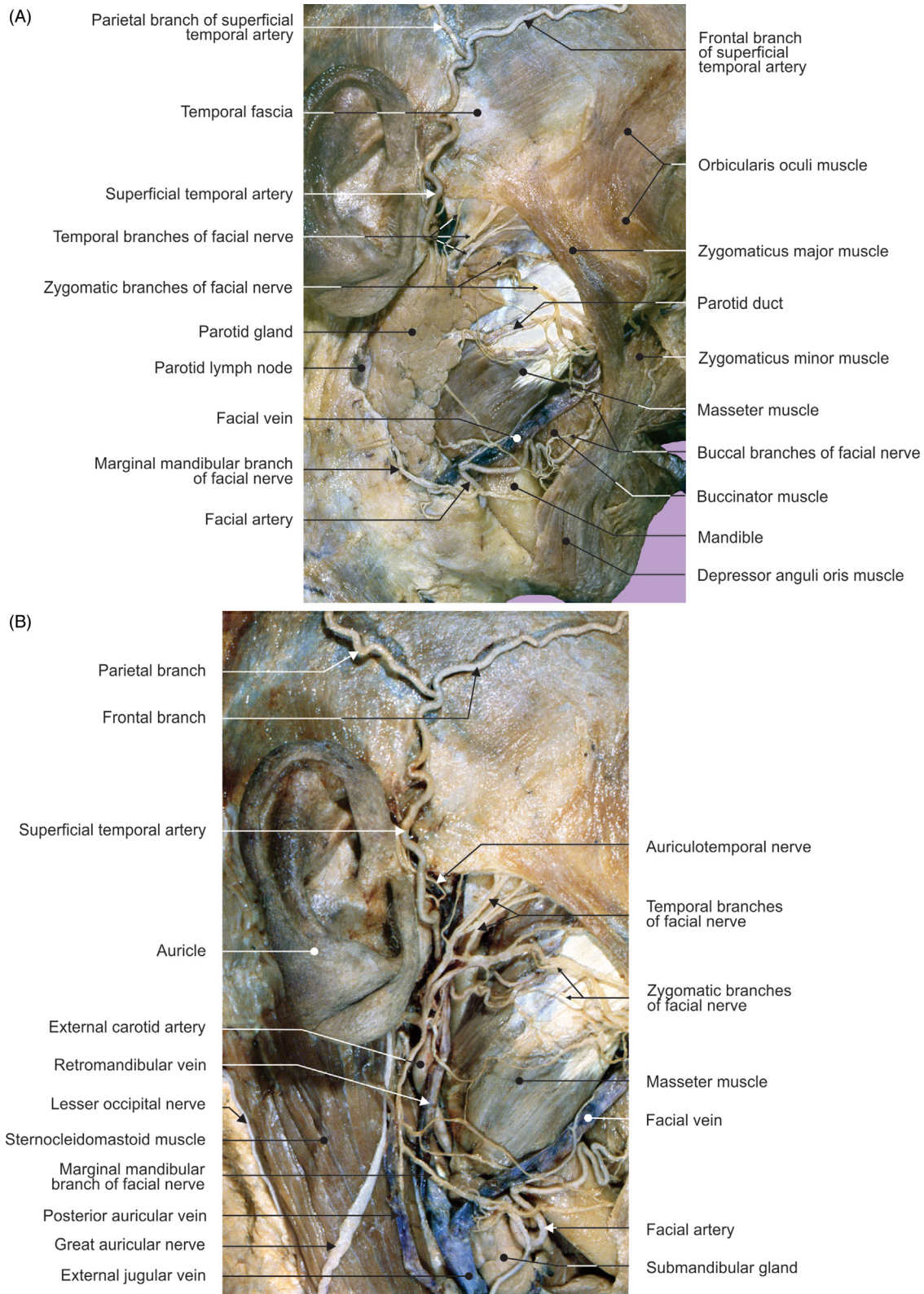


FIGURE 6.31 The parotidomasseteric region. (A) With parotid gland and (B) after the gland has been removed.

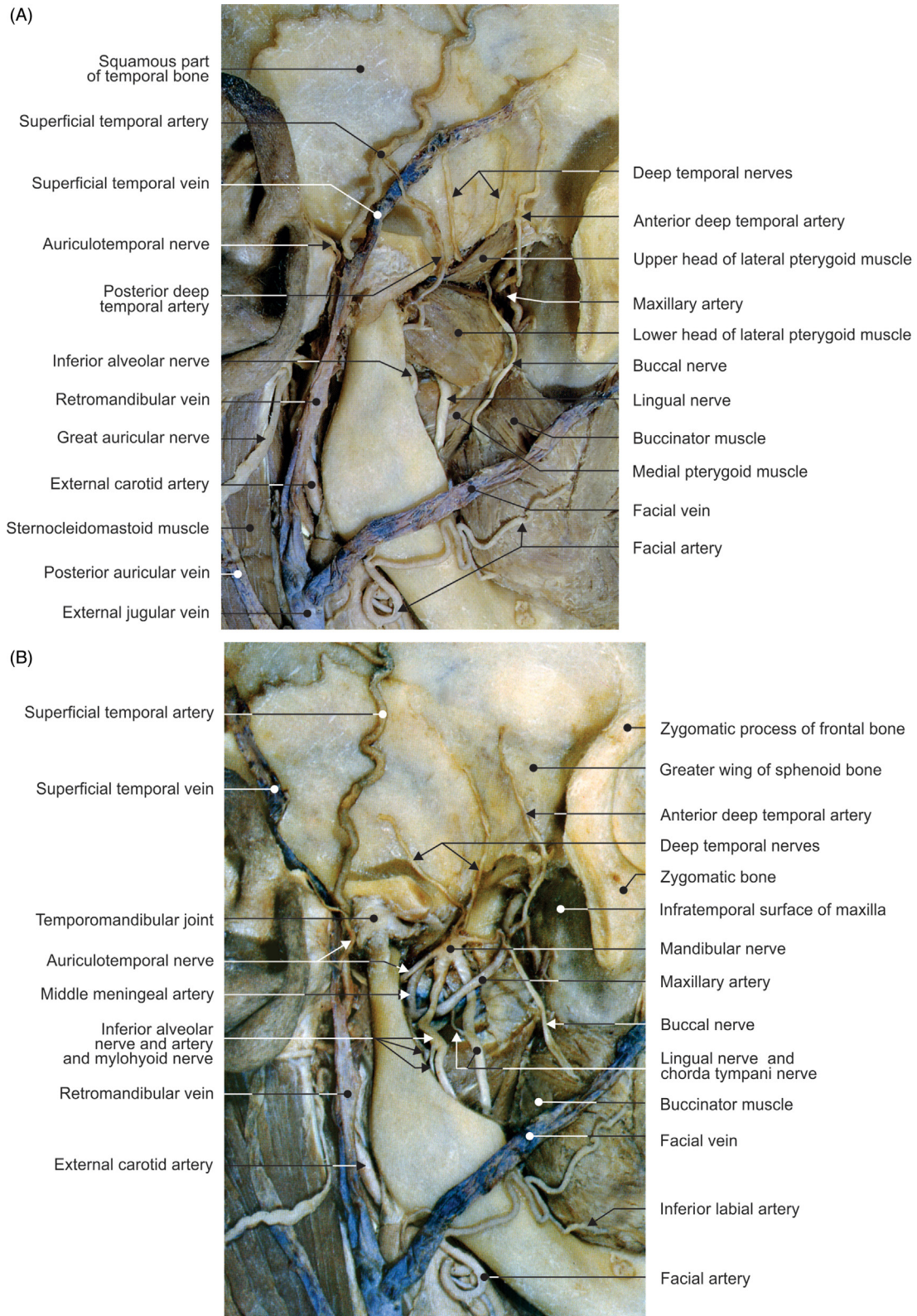


FIGURE 6.32 The infratemporal fossa. Structures in the (A) superficial and (B) deep layers.

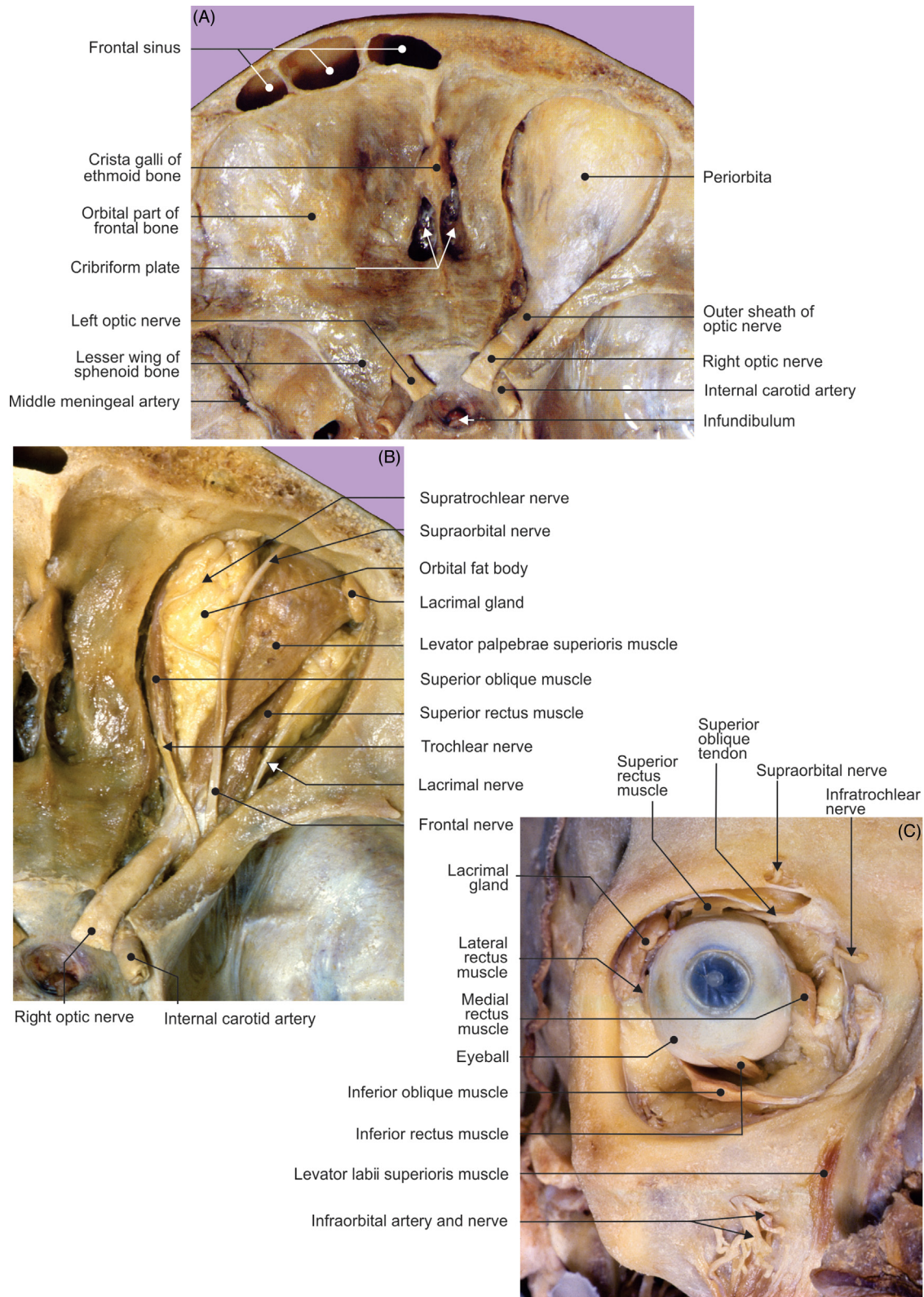


FIGURE 6.33 Dissection of the orbit. (A–B) View from above and (C) from the front.

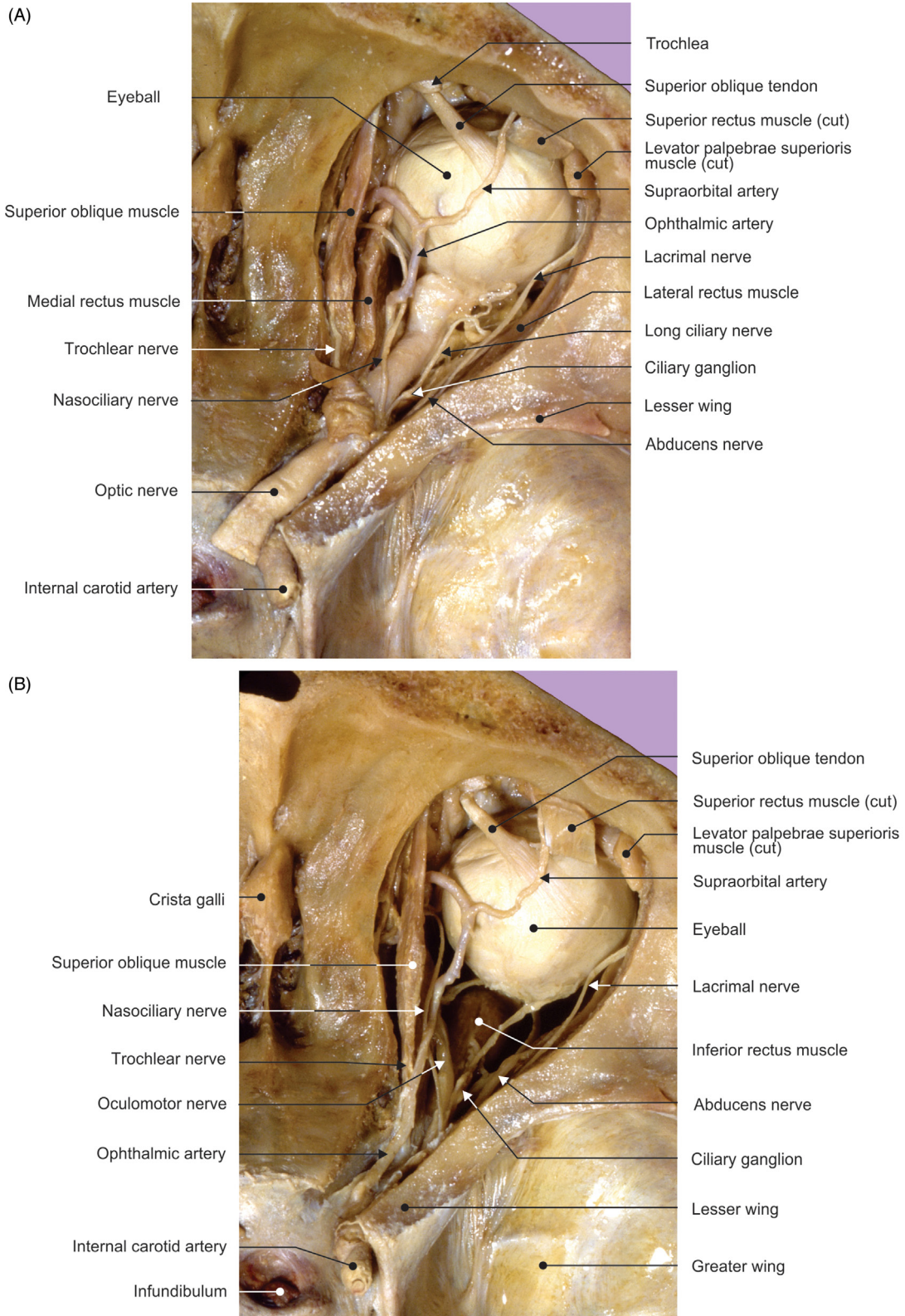
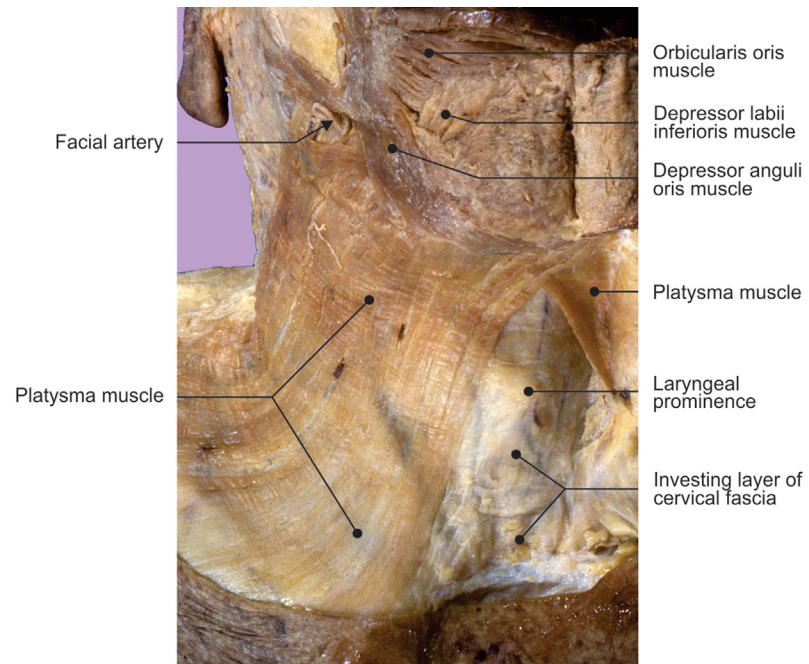


FIGURE 6.34 Dissection of the orbit. (A–B) Different views from above.

(A)



(B)

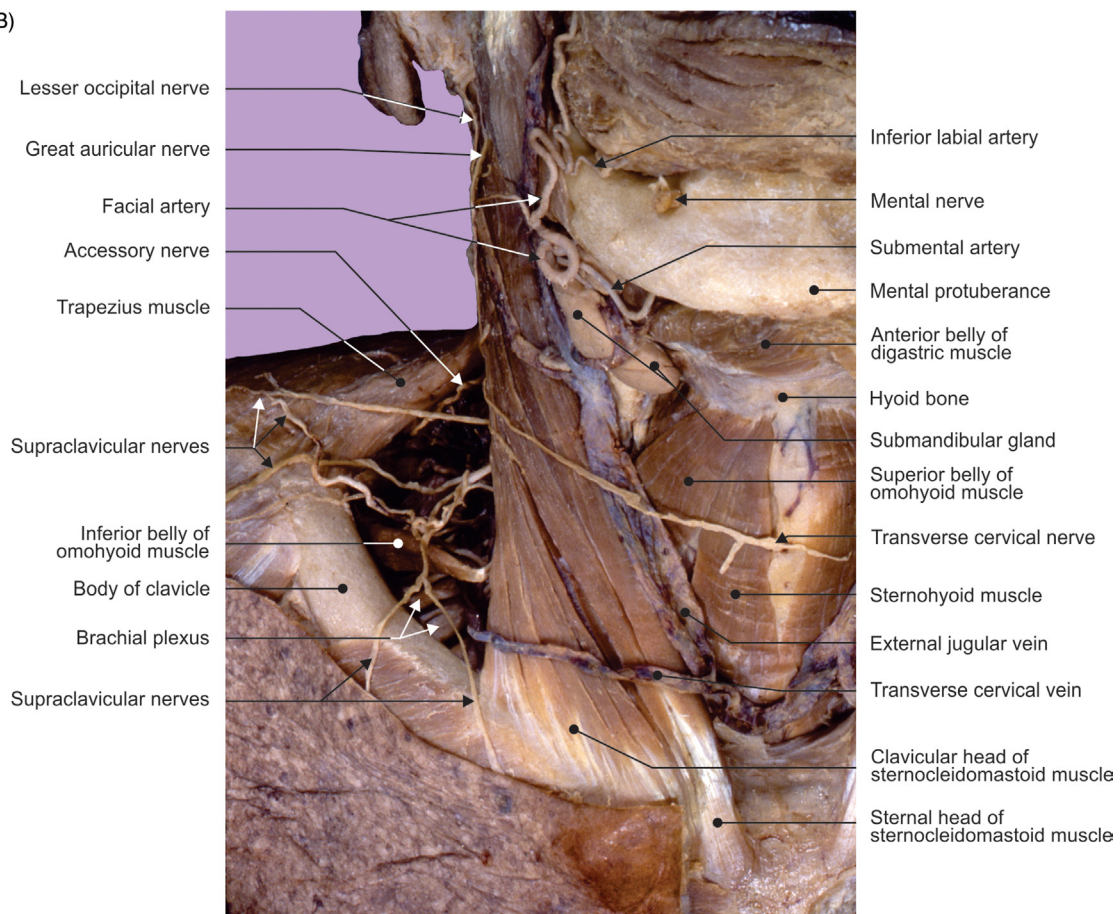


FIGURE 6.35 The anterior and lateral cervical regions. (A–B) Different views of the superficial, first layer.

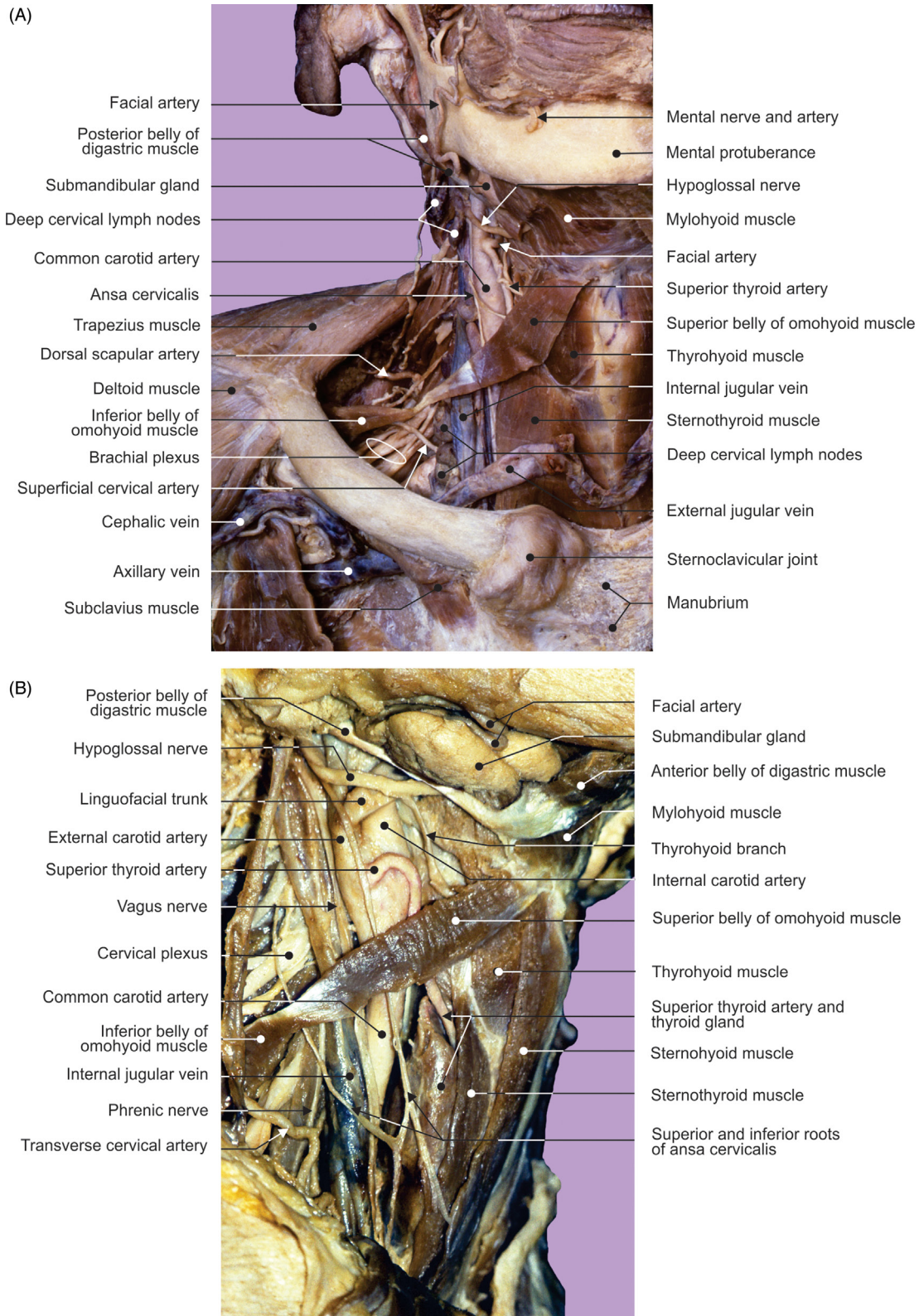


FIGURE 6.36 The anterior and lateral cervical regions. (A–B) Different views of the middle, second layer.

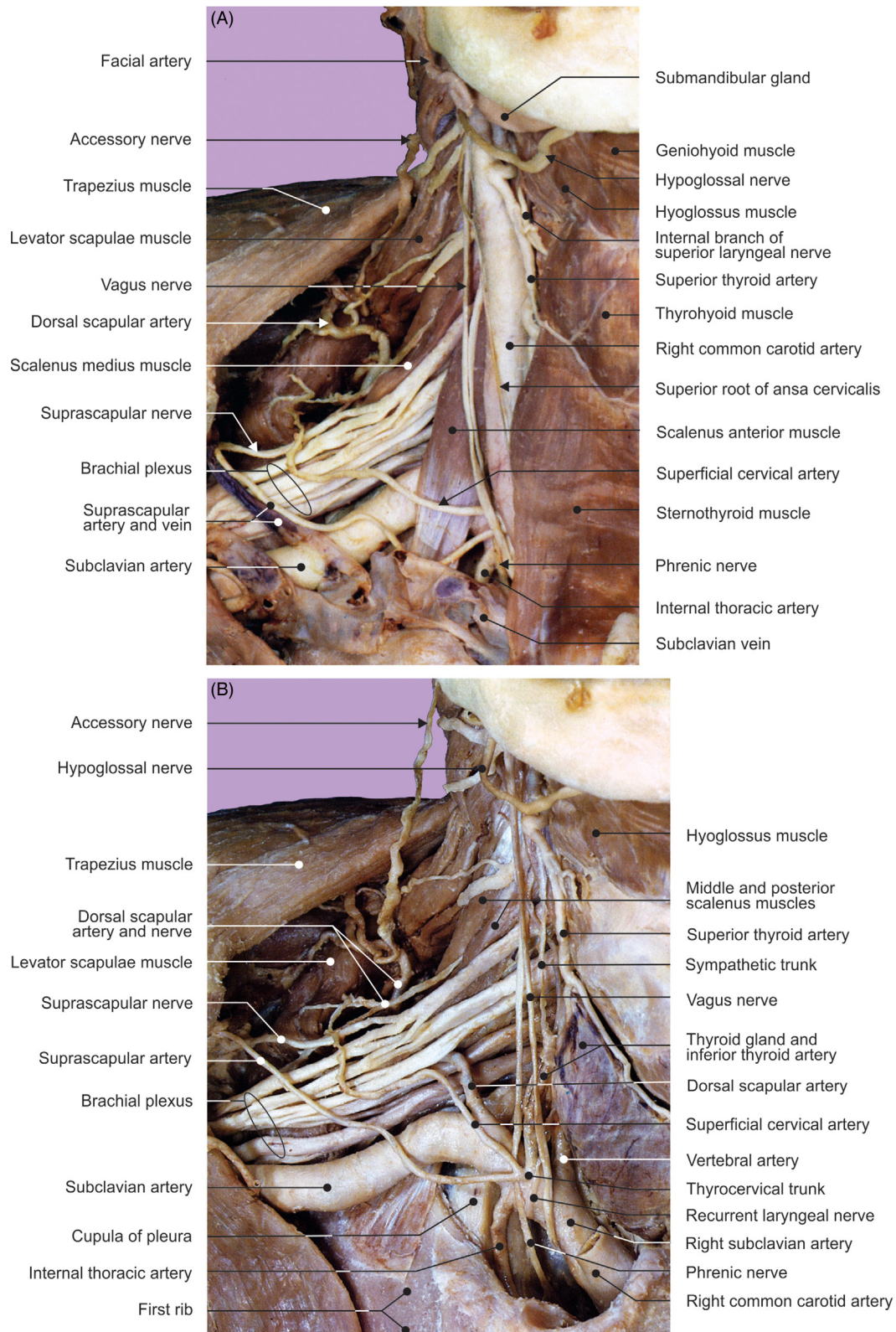


FIGURE 6.37 The anterior and lateral cervical regions. (A–B) Different views of the deep, third layer.

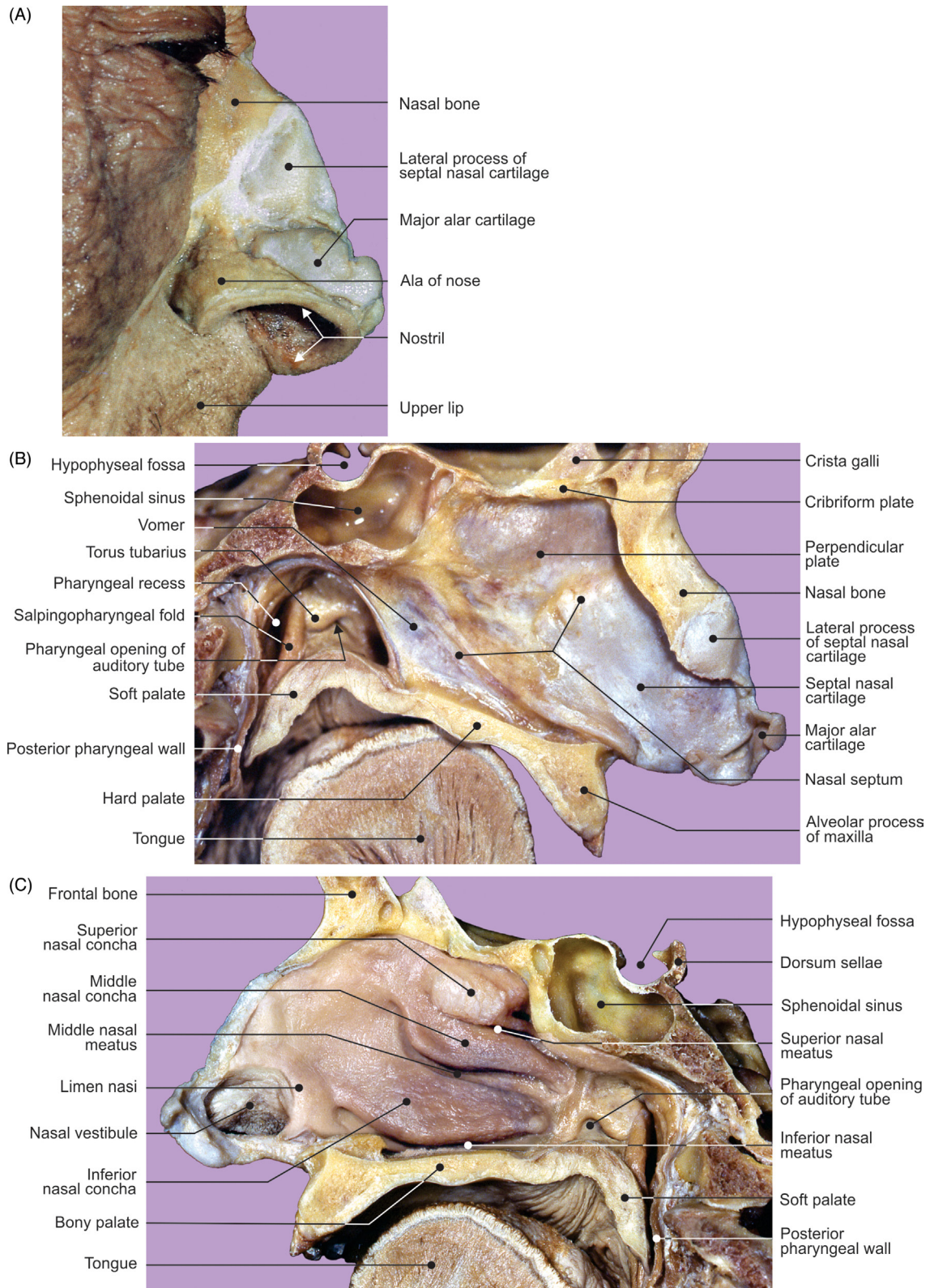


FIGURE 6.38 The nasal and nasopharyngeal regions. (A) External nasal cartilages, (B) nasal septum, and (C) lateral nasal wall and nasopharynx.

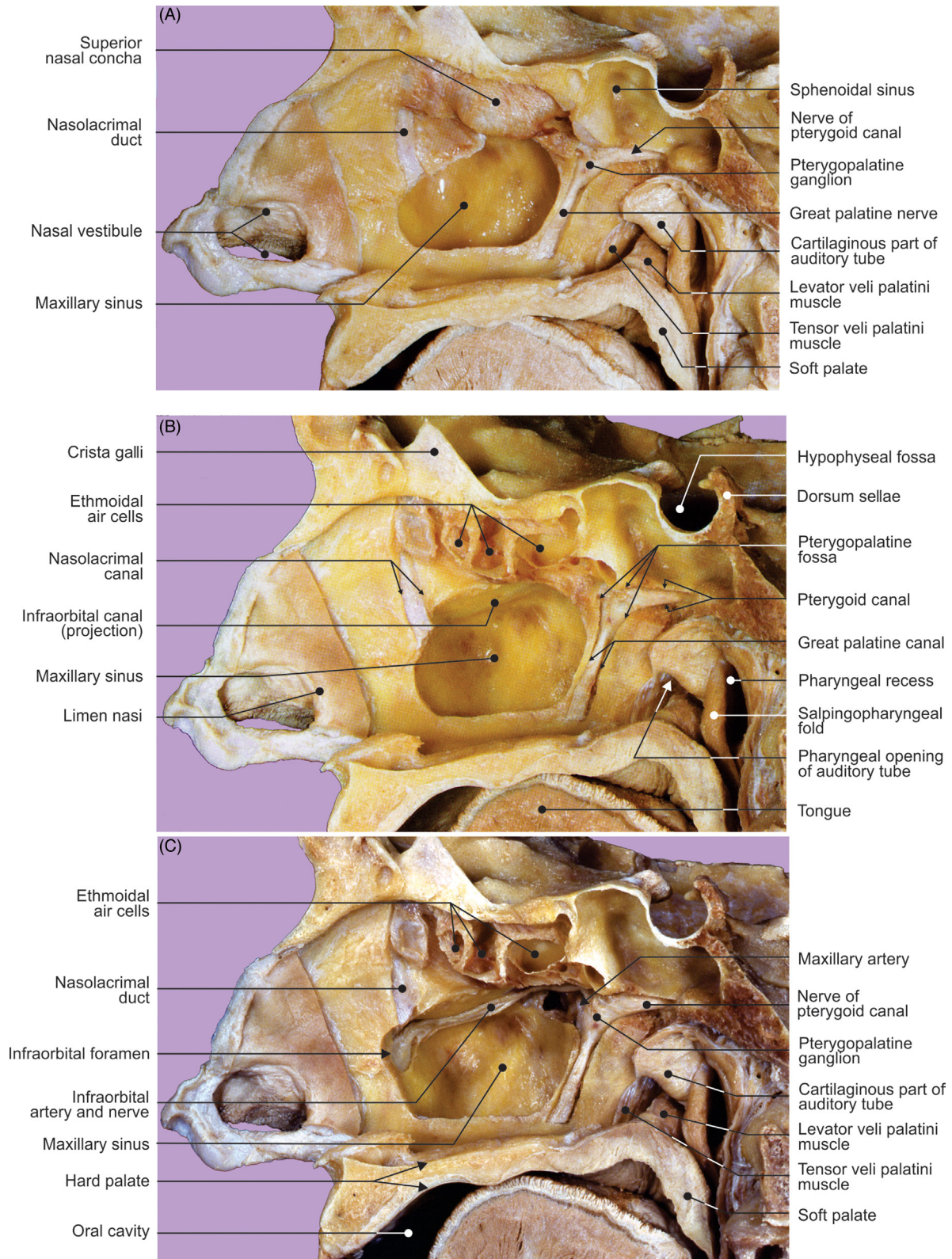


FIGURE 6.39 Dissection from the nasal cavity of the lateral nasal and nasopharyngeal walls. (A) First, (B) second, and (C) third layers.

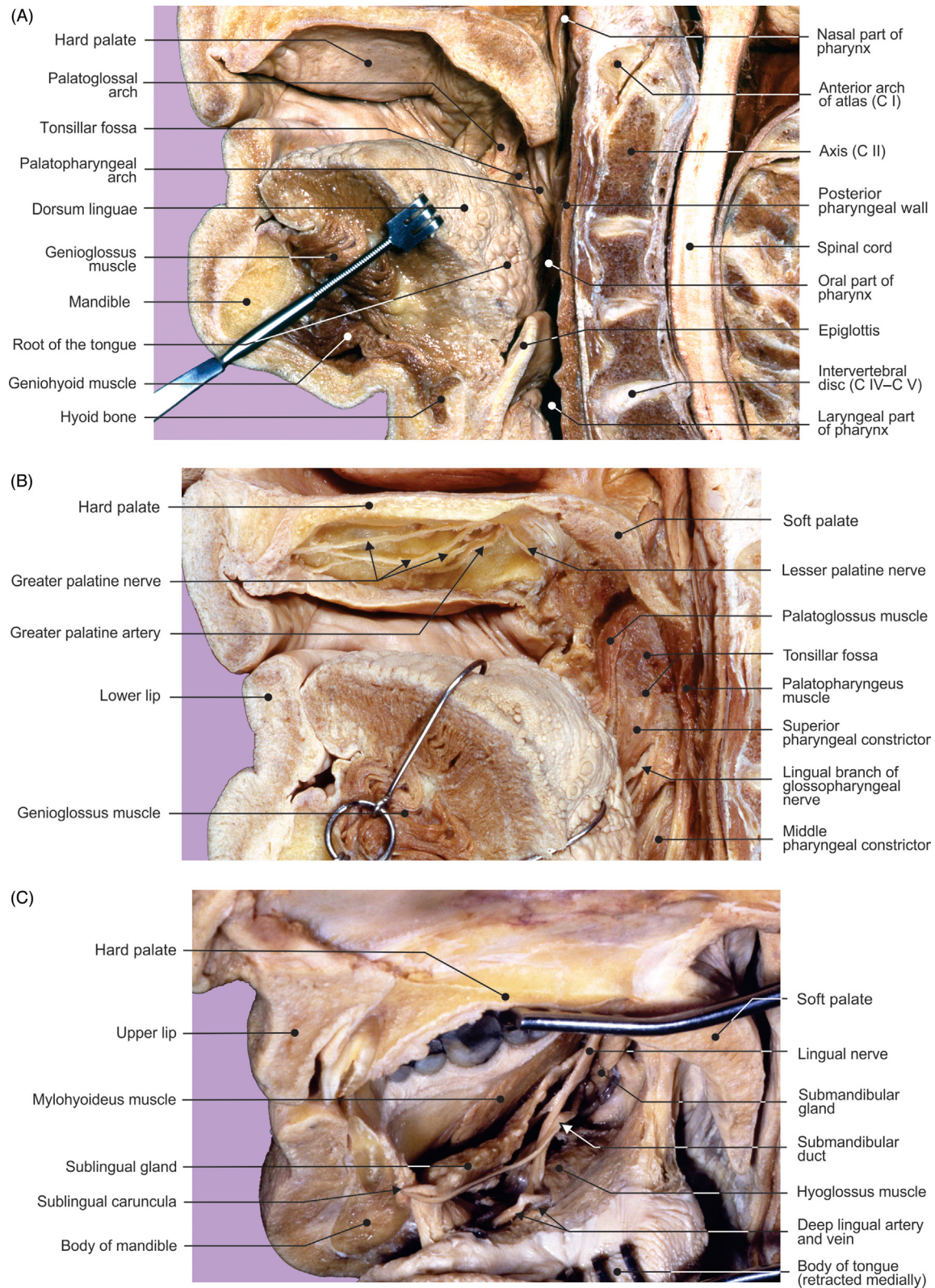


FIGURE 6.40 The midsagittal section of the oral cavity. Dissections of the (A) lateral wall, (B) roof, and (C) floor.

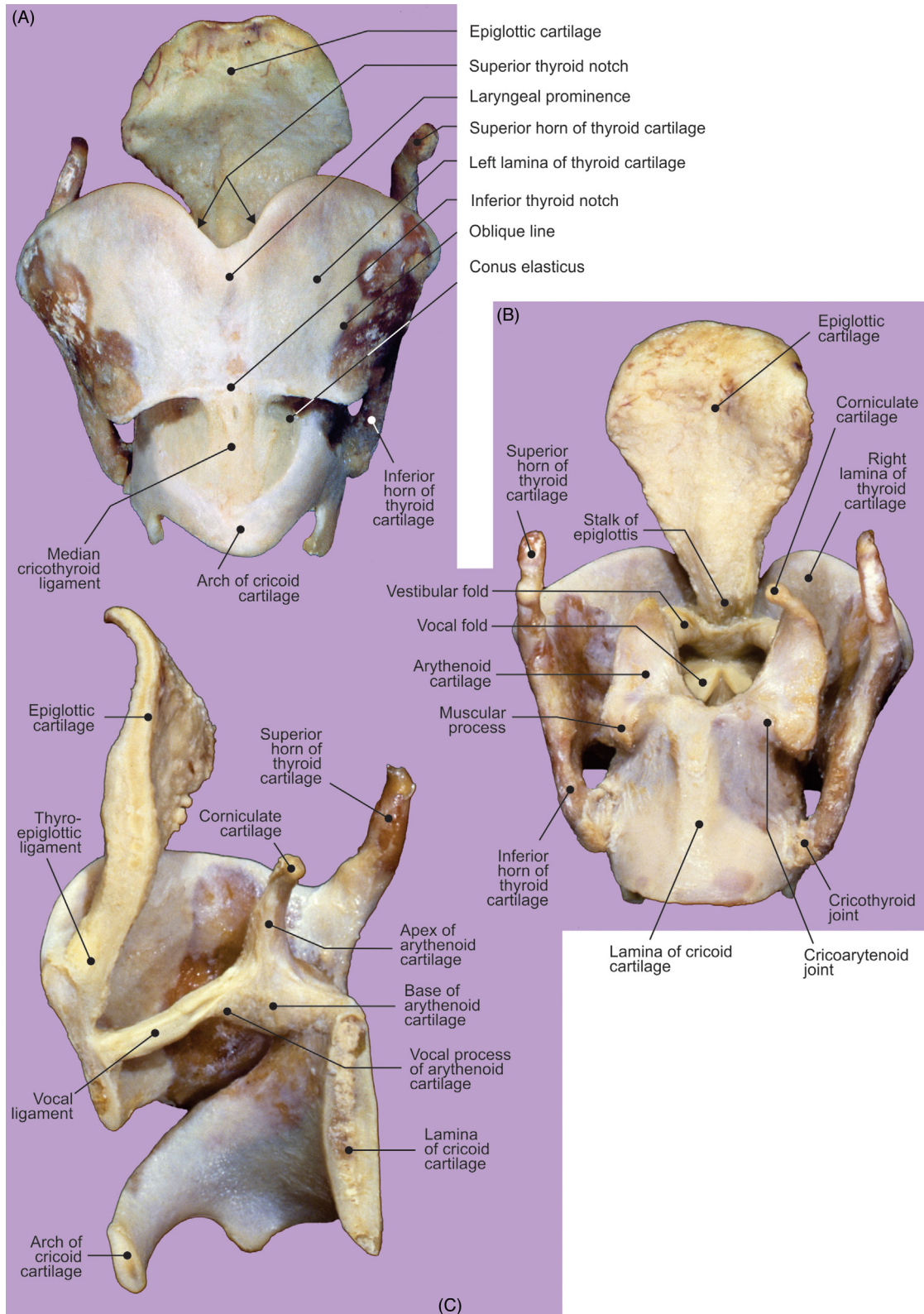


FIGURE 6.41 The laryngeal cartilages. (A) Anterior, (B) posterior, and (C) right half of laryngeal cartilages viewed from inside (midsagittal section of laryngeal cartilages).

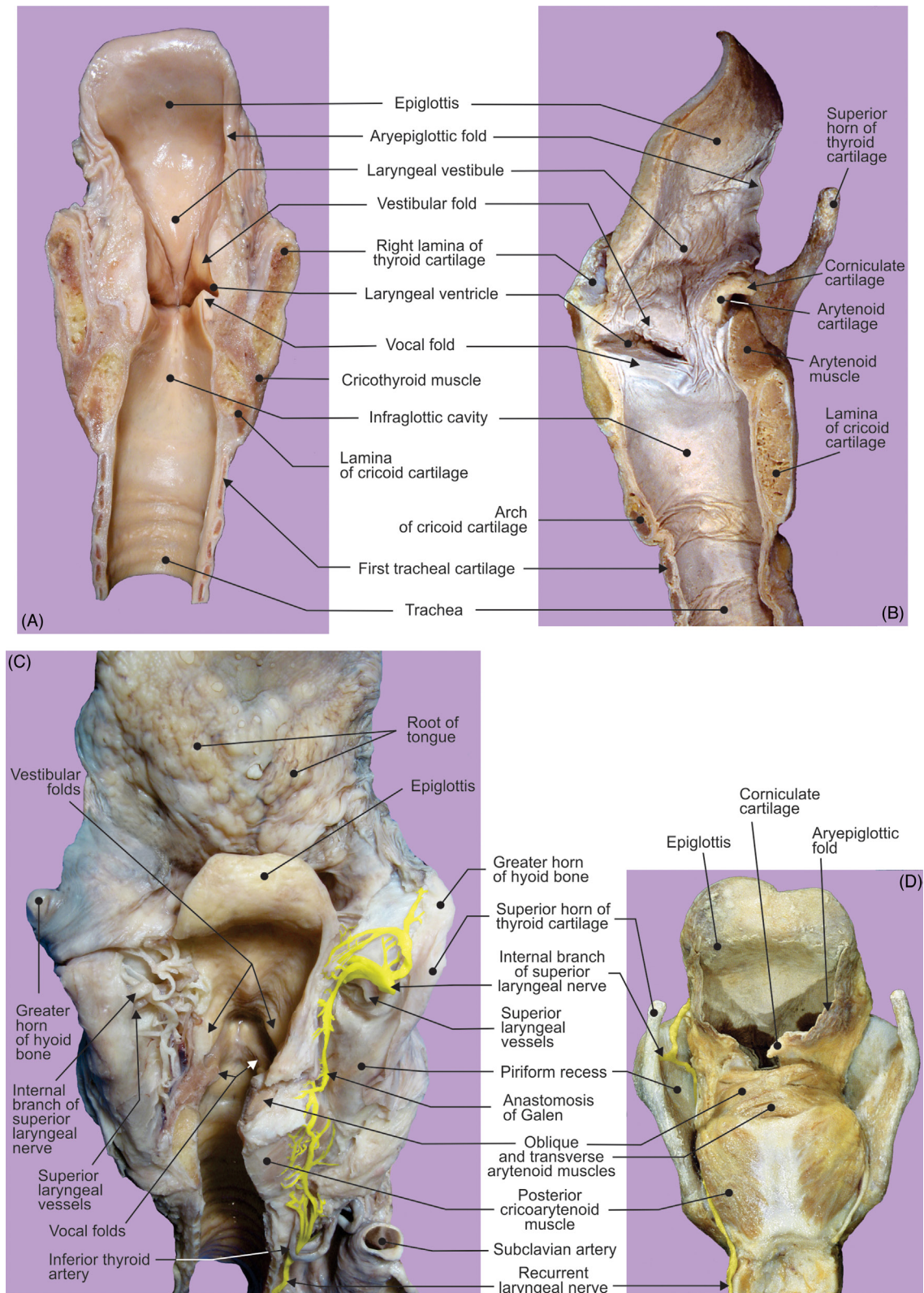


FIGURE 6.42 The internal laryngeal features. (A) Frontal section, view from behind; (B) right half of the midsagittal section, view from inside; (C) dissection of the piriform recess; and (D) dissection of the posterior laryngeal muscles.

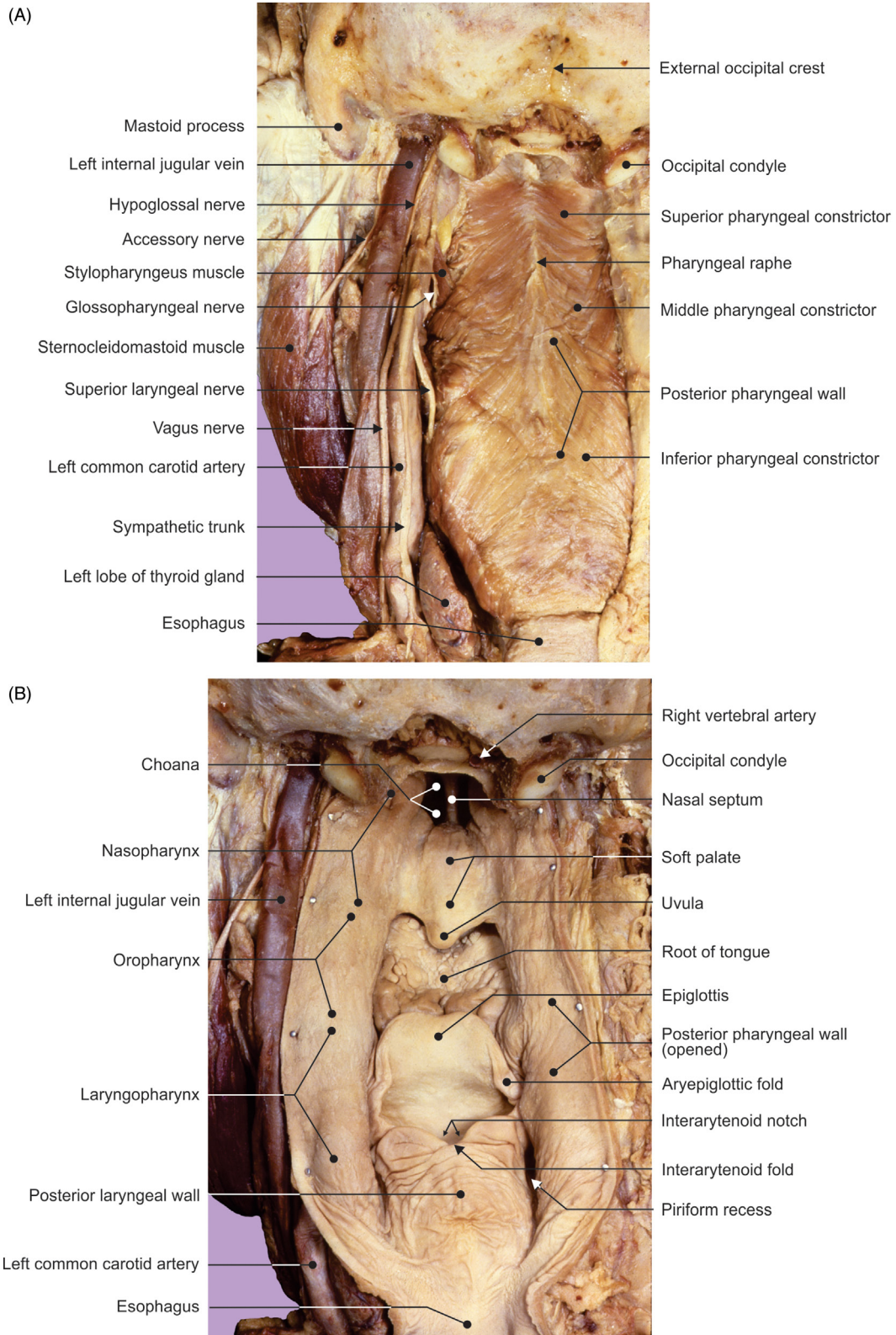


FIGURE 6.43 (A) The posterior aspect of the pharyngeal constrictor muscles and content of the parapharyngeal space. (B) Reflection of the posterior pharyngeal wall, internal pharyngeal structures.

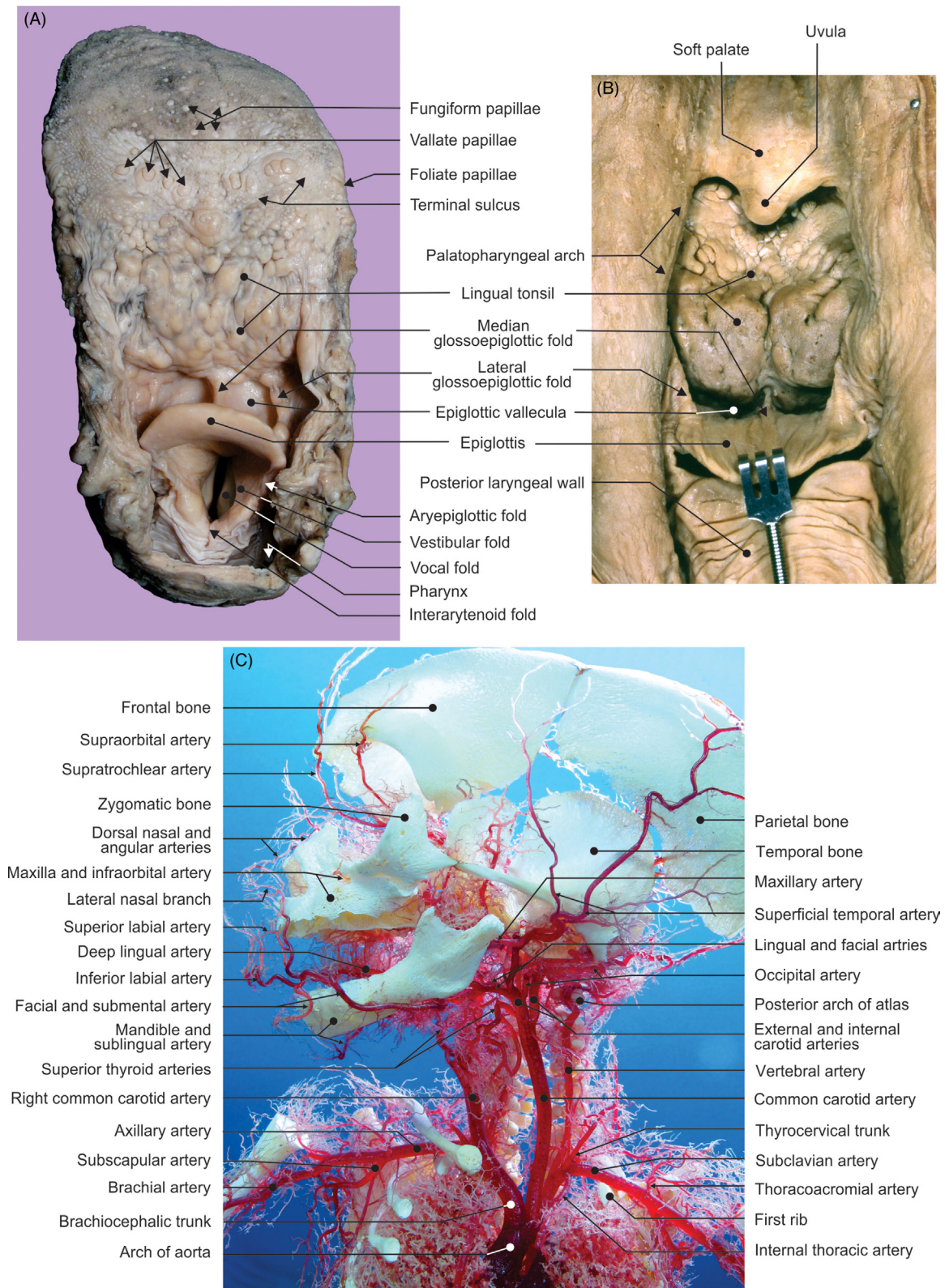


FIGURE 6.44 (A) Superior view of the tongue and larynx. (B) Root of tongue viewed from behind. (C) Fetal arterial corrosion cast of head and neck.

Chapter 7

Cranial Central Nervous System and Spinal Cord

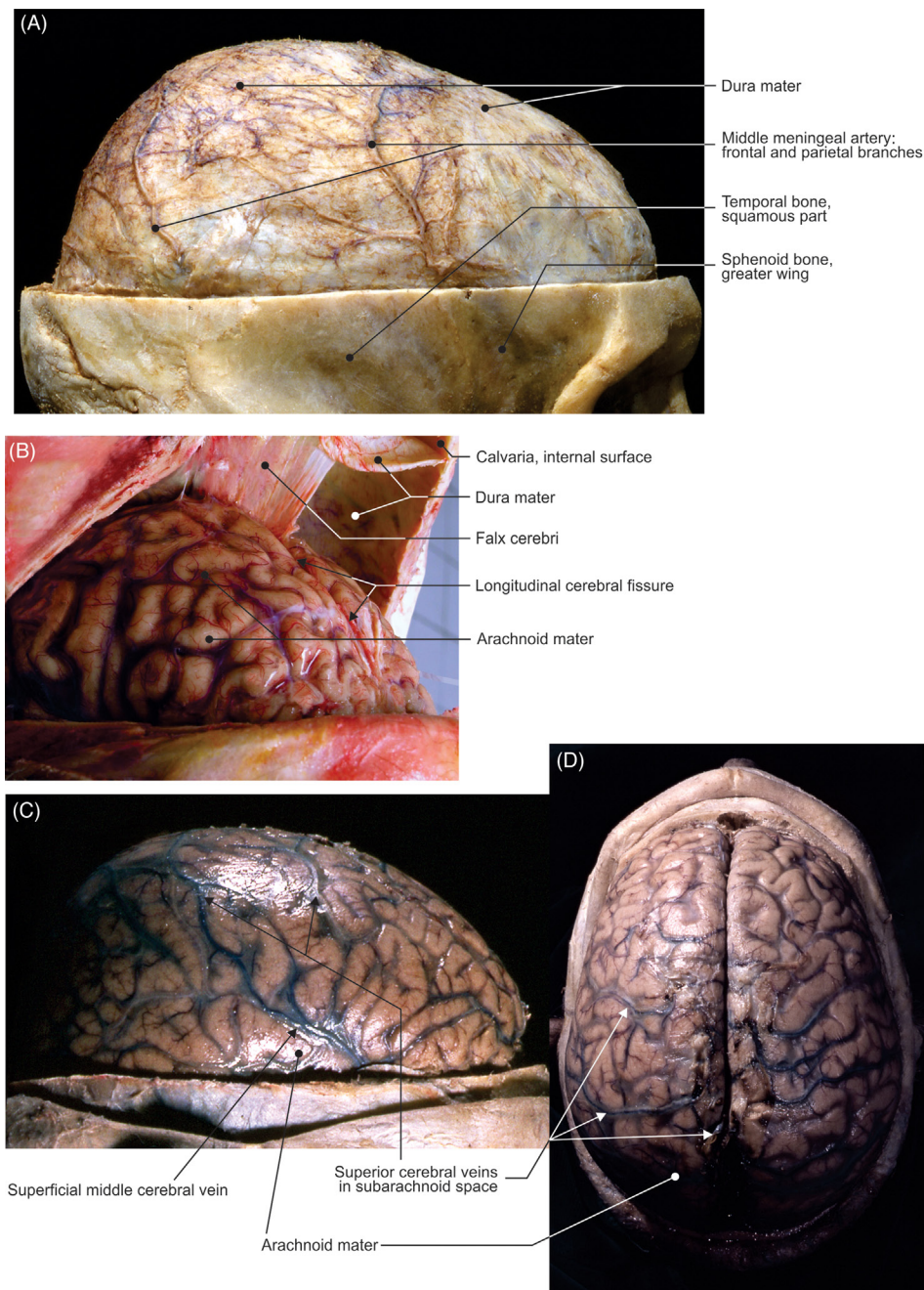


FIGURE 7.1 Meninges. (A, C–D) Formalin-fixed and (B) native specimens.

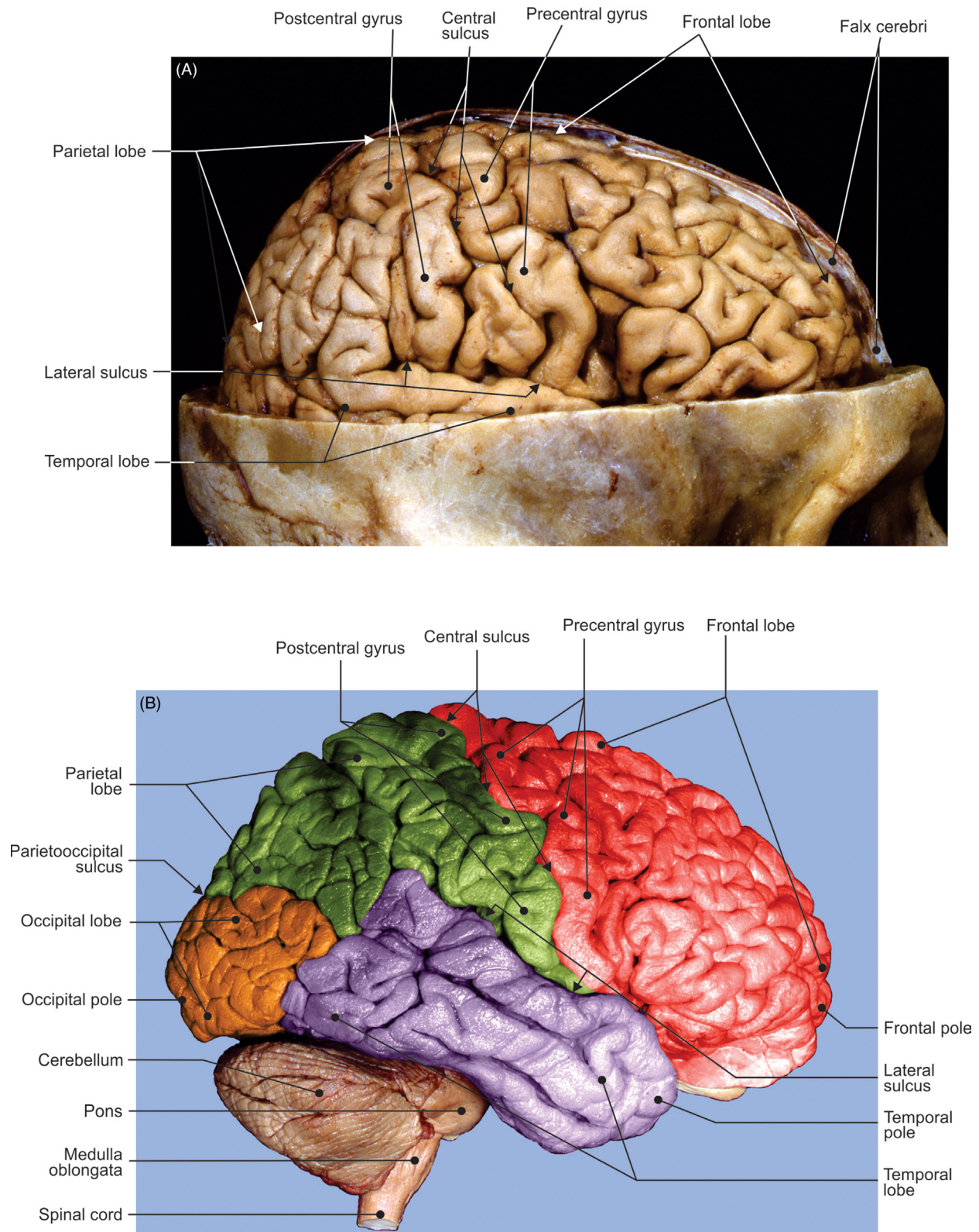


FIGURE 7.2 The right cerebral hemisphere. (A–B) Different views of the superolateral aspect.

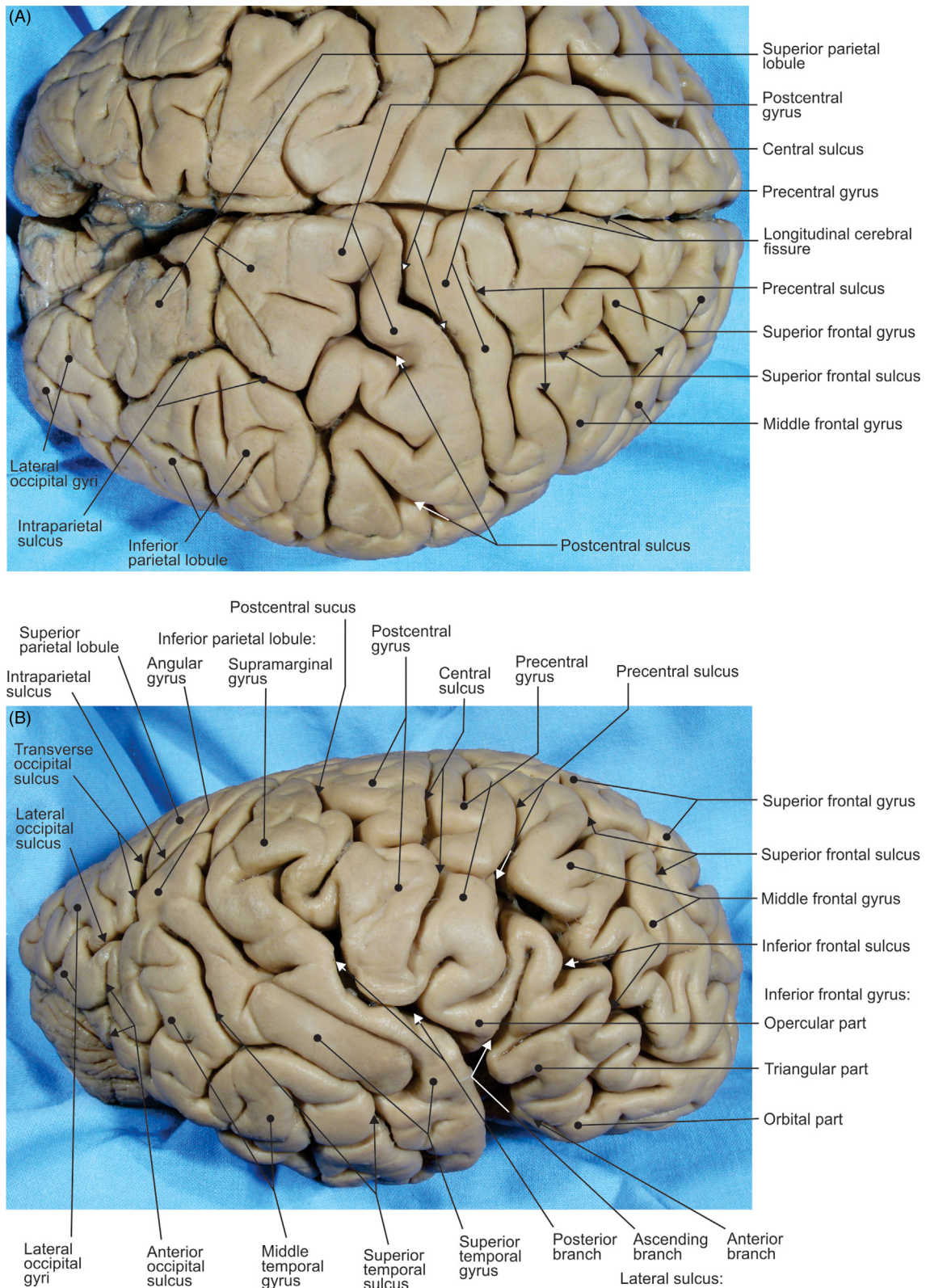


FIGURE 7.3 Superior aspect of (A) both hemispheres and (B) of the right hemisphere.

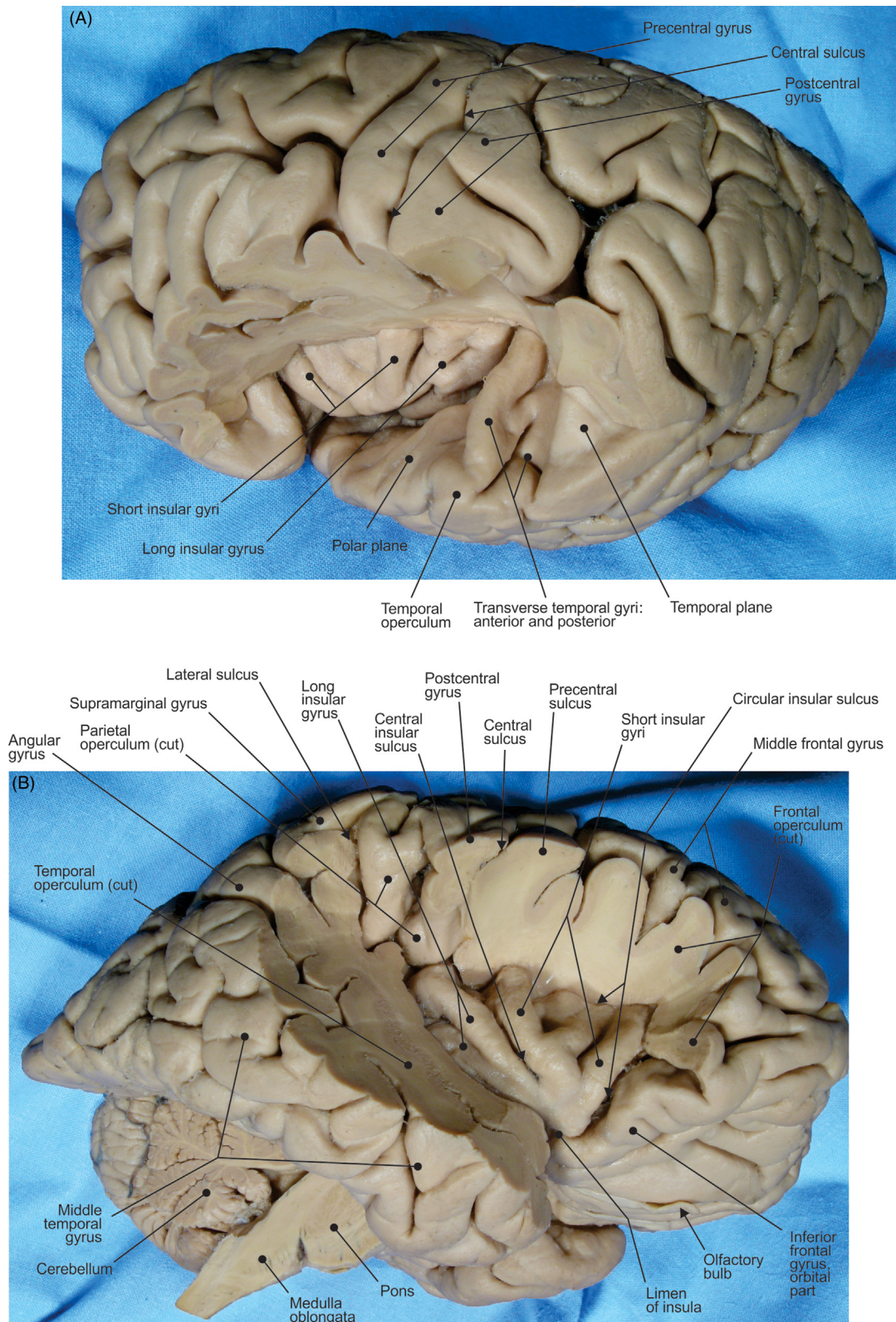


FIGURE 7.4 (A–B) Different views of the superolateral aspect of a hemisphere.

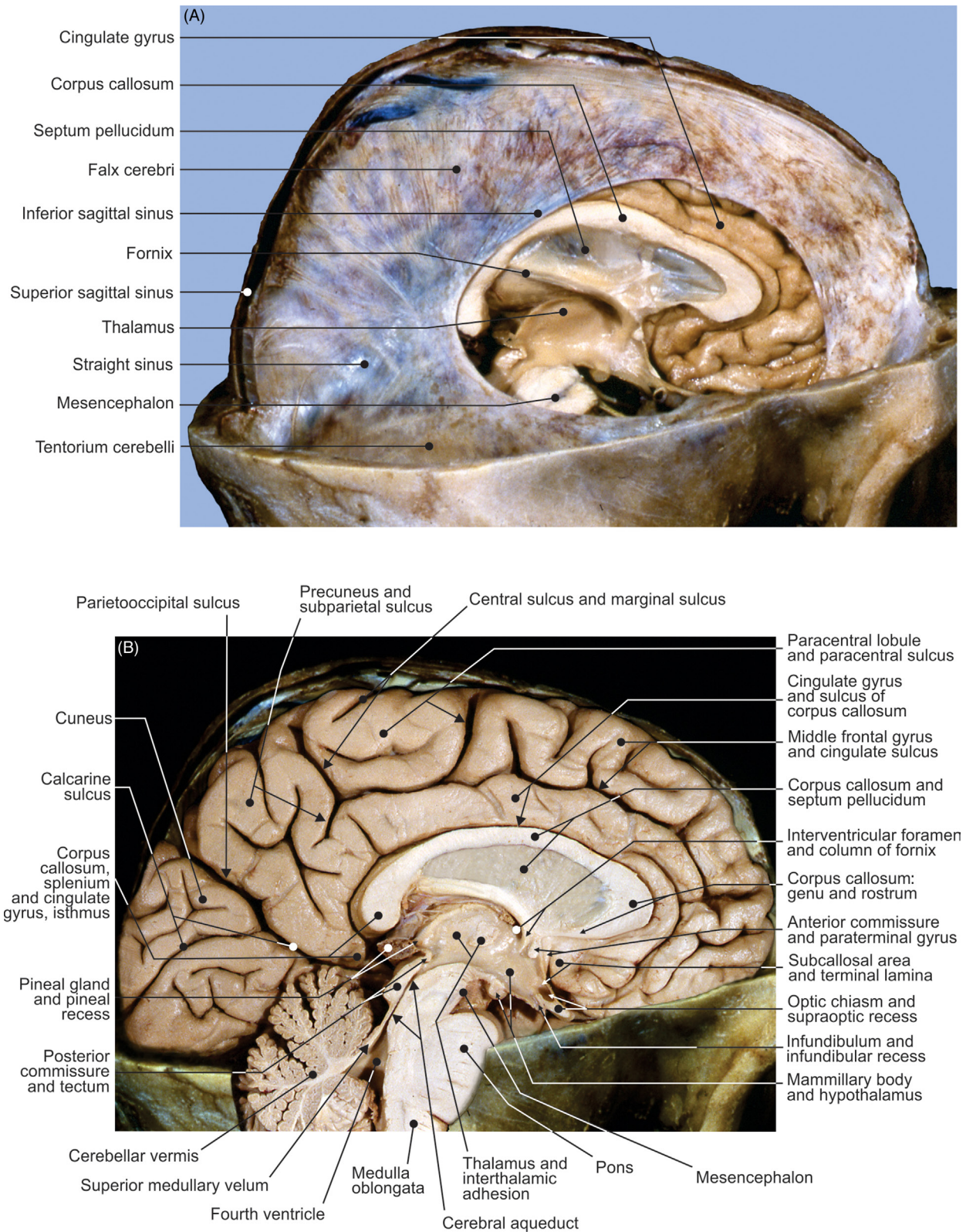


FIGURE 7.5 (A) Falx cerebri and (B) the medial aspect of the left hemisphere.

(A)



(B)

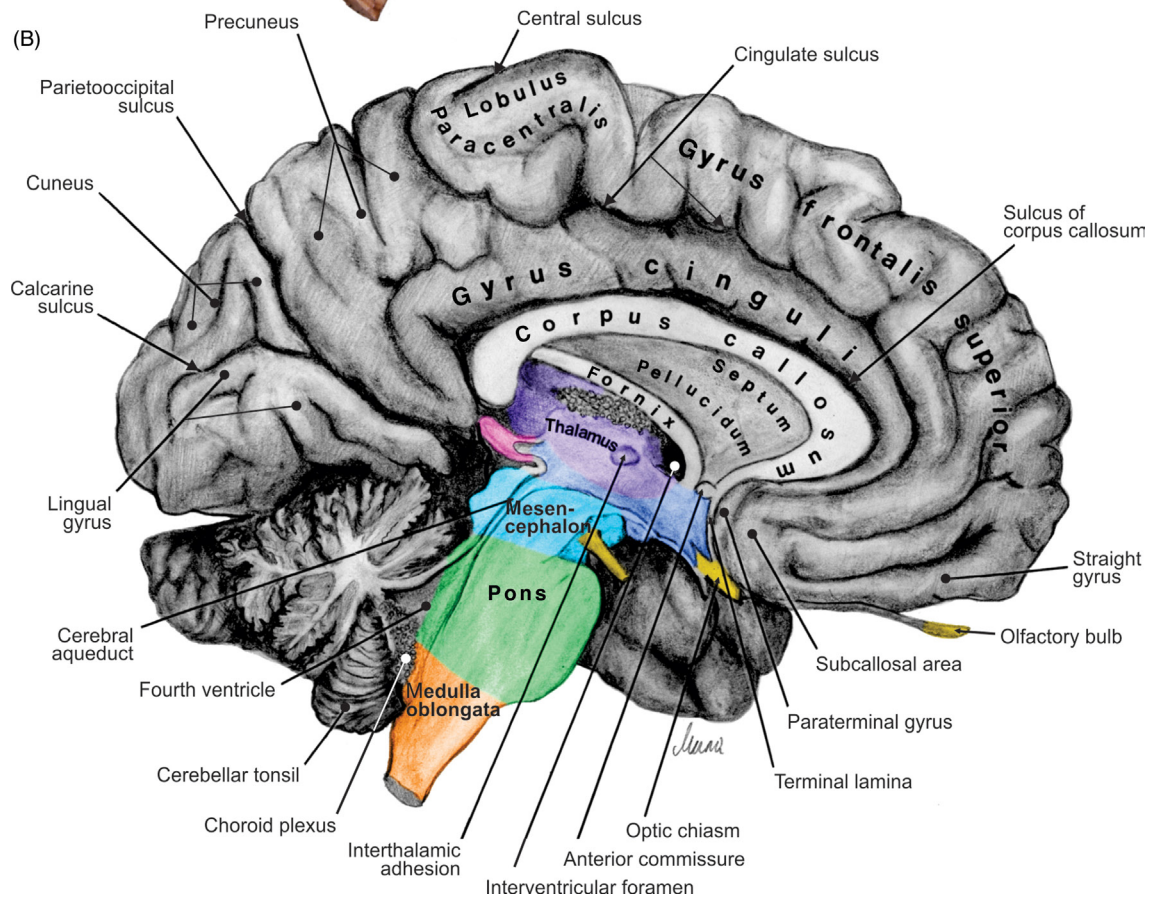


FIGURE 7.6 Midsagittal section of the brain. (A) The medial aspect of the left hemisphere and (B) illustration.

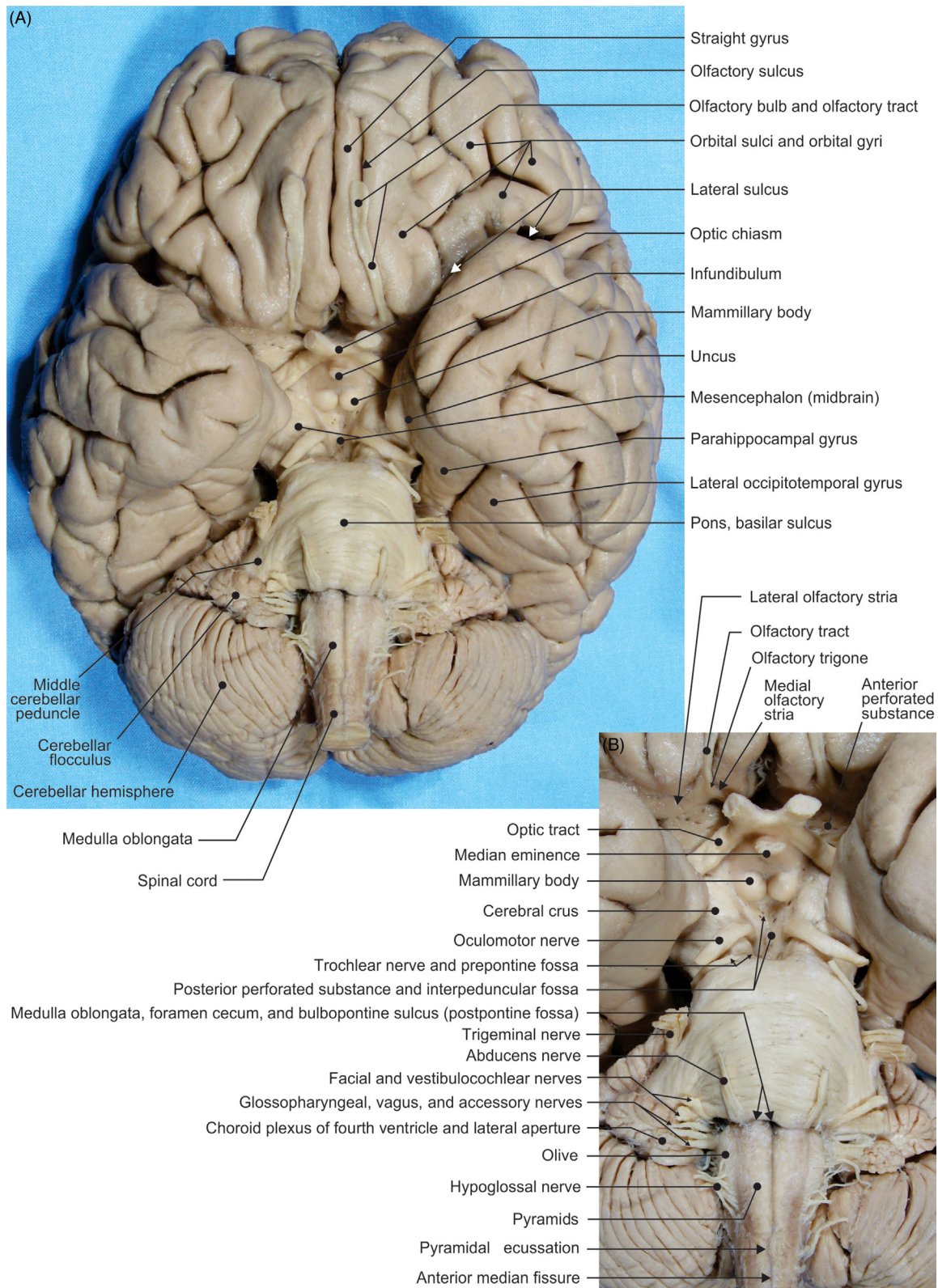


FIGURE 7.7 Cerebrum, cerebellum, and brainstem. (A) Inferior aspect and (B) details.

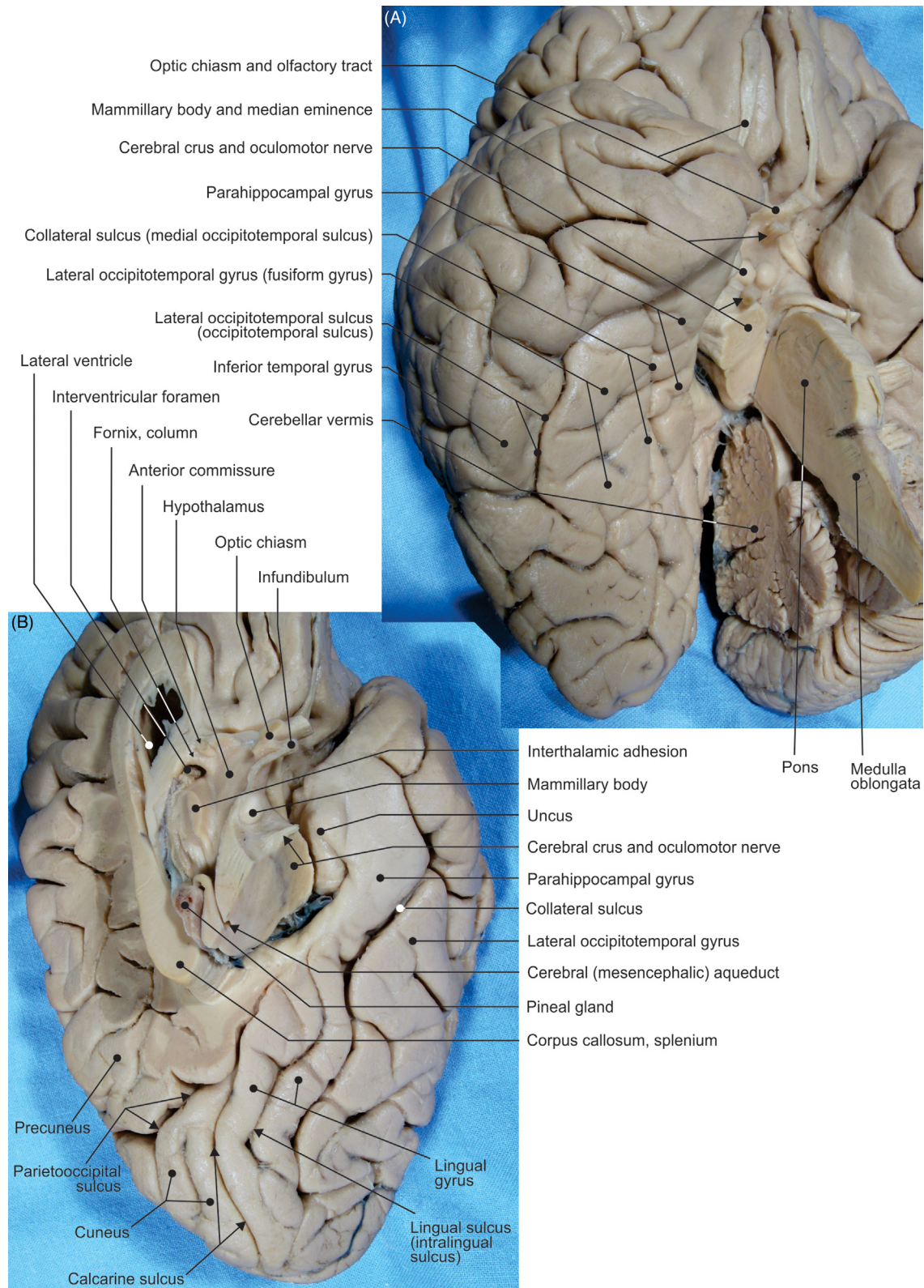


FIGURE 7.8 (A–B) Different views of the inferior aspects of the cerebral hemispheres.

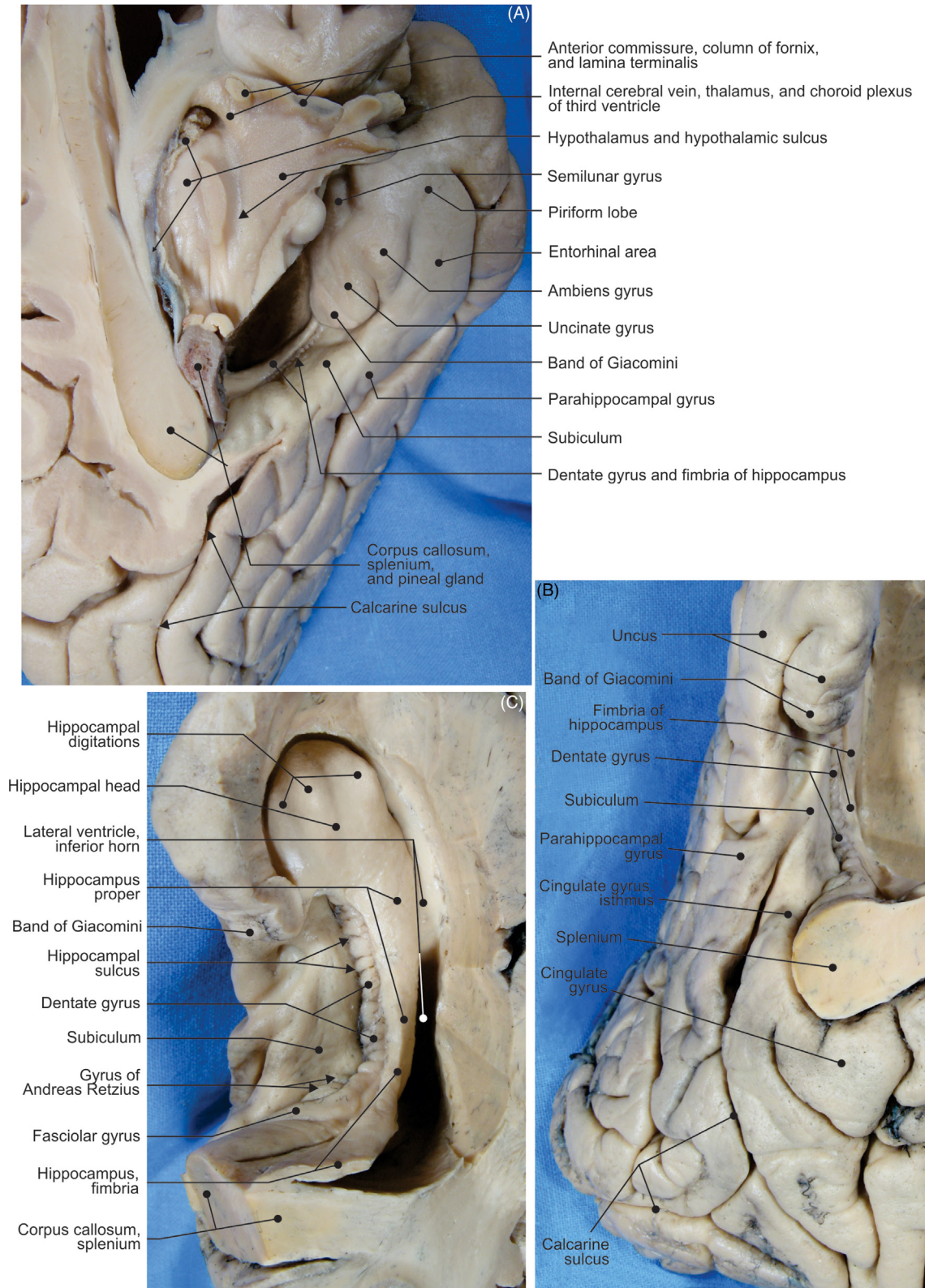


FIGURE 7.9 The hippocampus. (A) Inferomedial view, (B) medial view, and (C) view from the lateral ventricle.

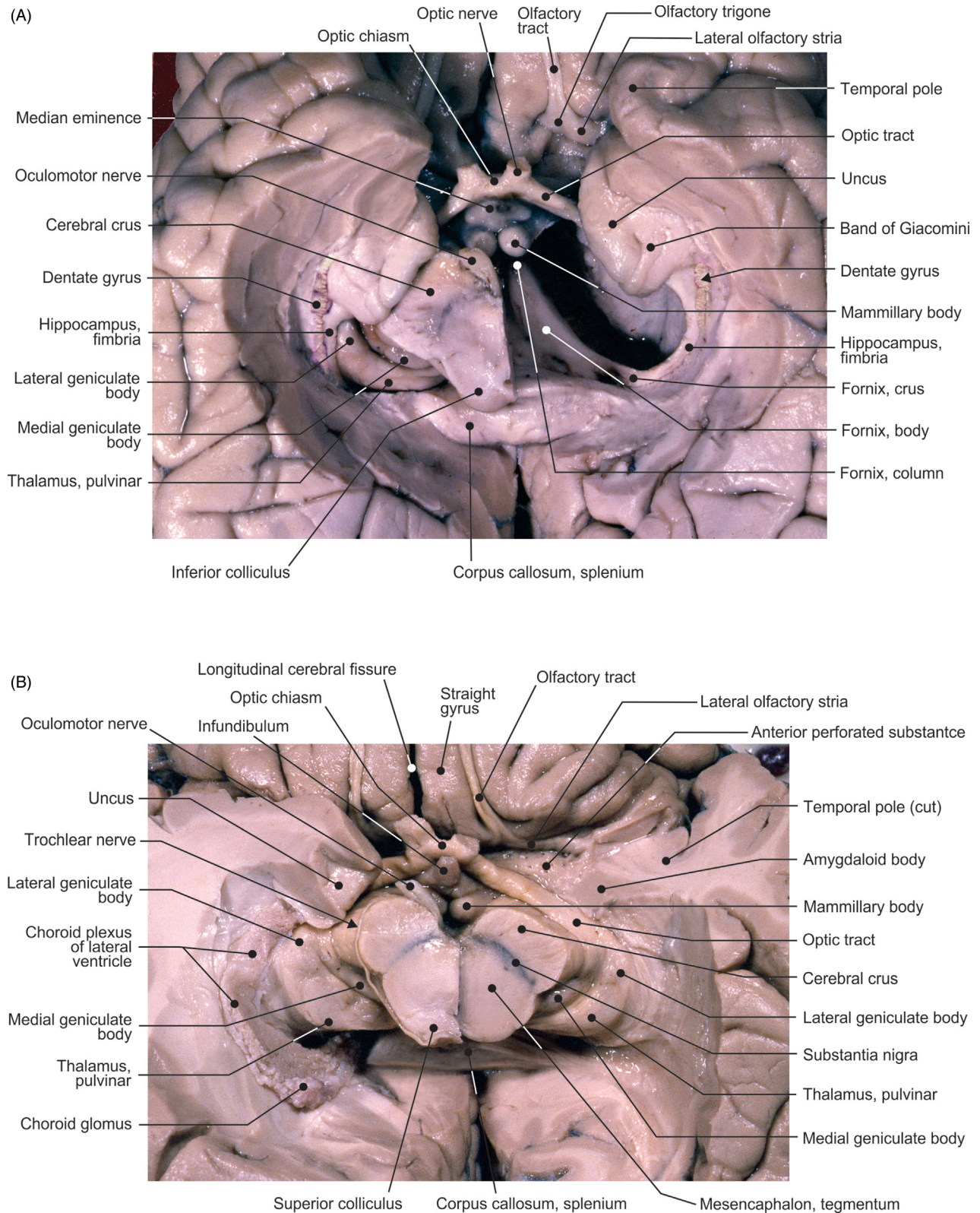


FIGURE 7.10 The inferior aspect of encephalon. (A) Removed: both parahippocampal fimbriae, caudal segment of the brainstem, and thalamus of the left side. (B) Removed: both parahippocampal fimbriae and caudal segment of the brainstem.

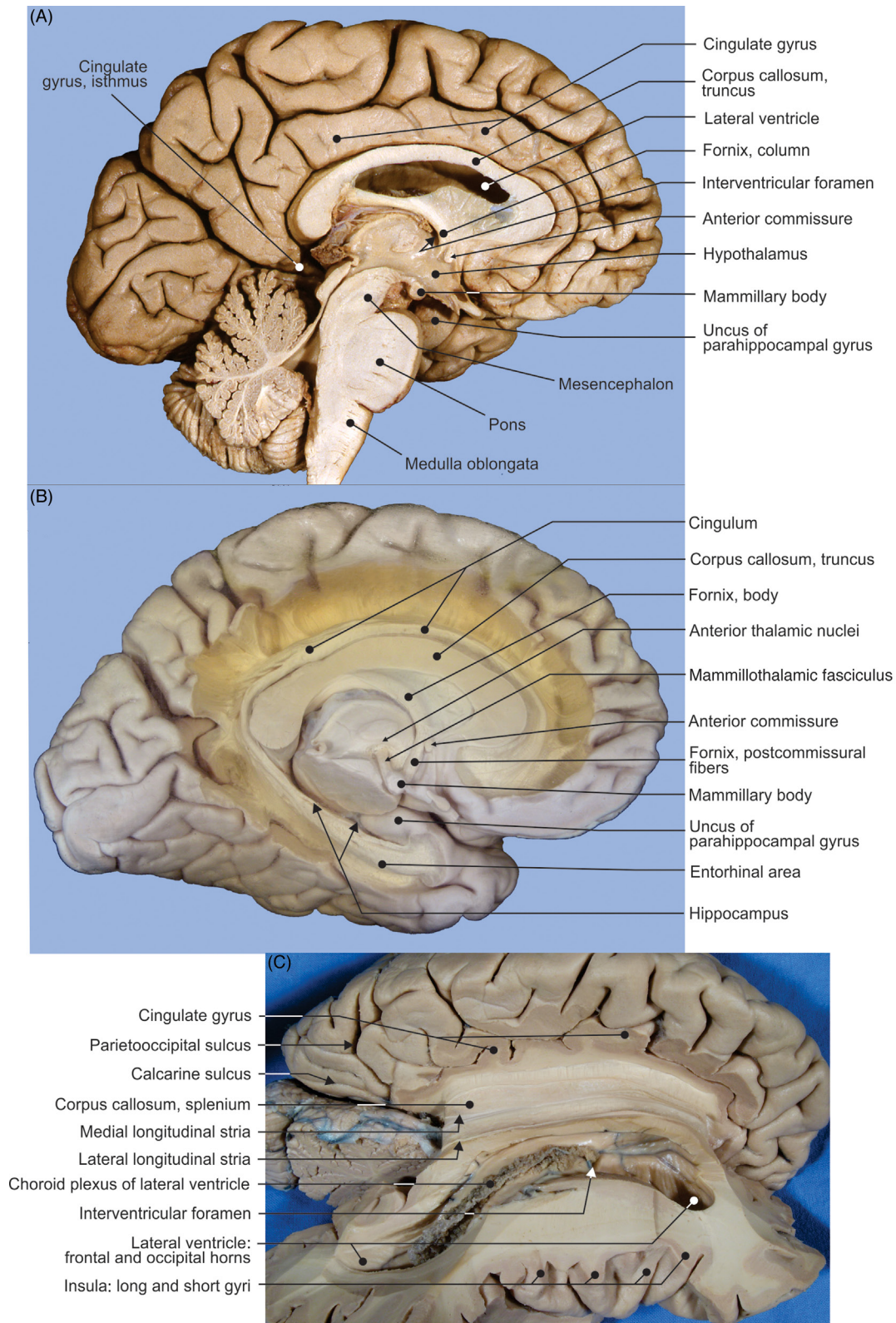


FIGURE 7.11 The limbic lobe. (A) Medial aspect, (B) dissection, and (C) corpus callosum, view from above.

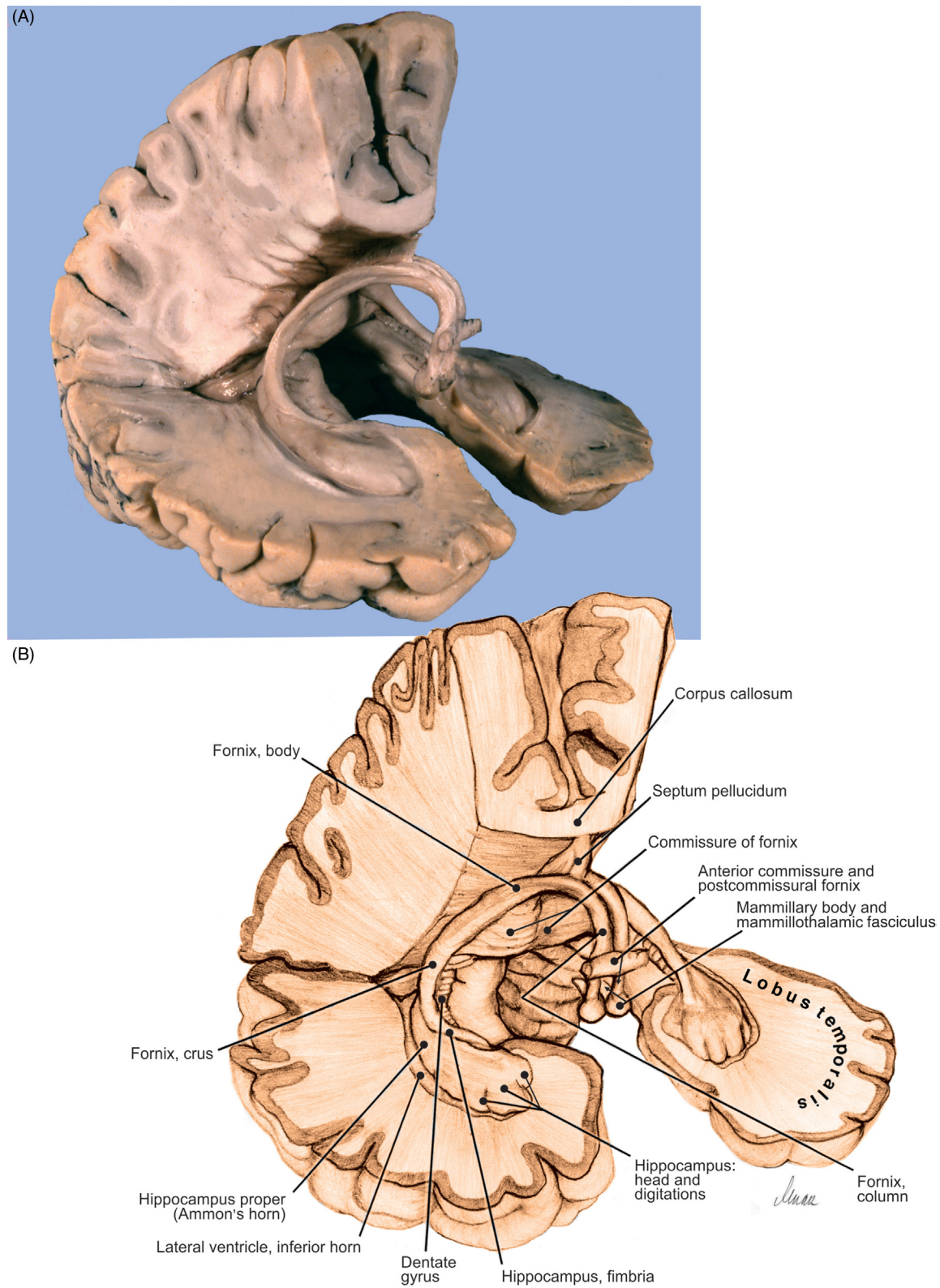


FIGURE 7.12 The fornix and hippocampus. (A) Dissection and (B) illustration.

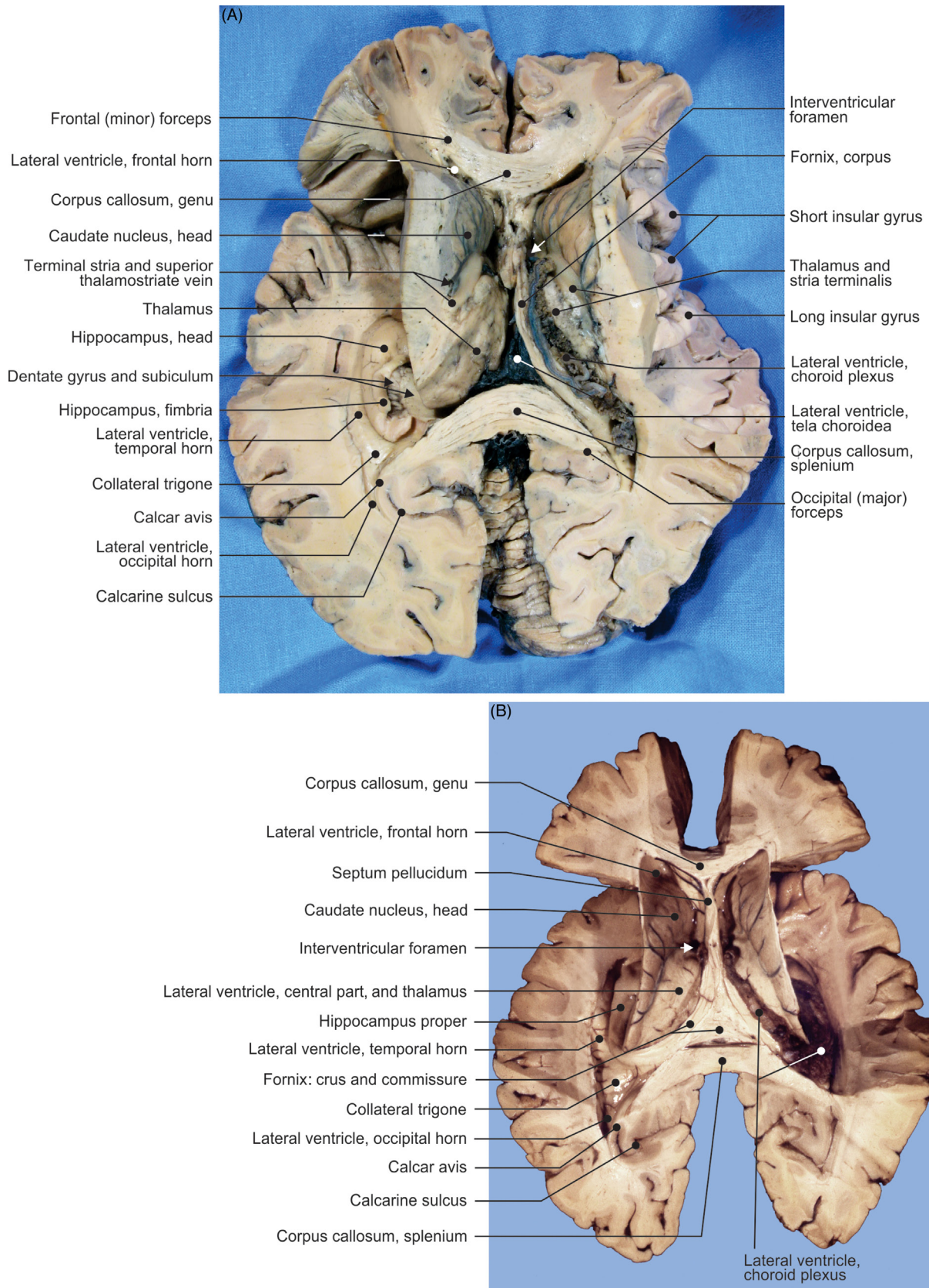


FIGURE 7.13 Lateral ventricles. (A–B) Different views from above.

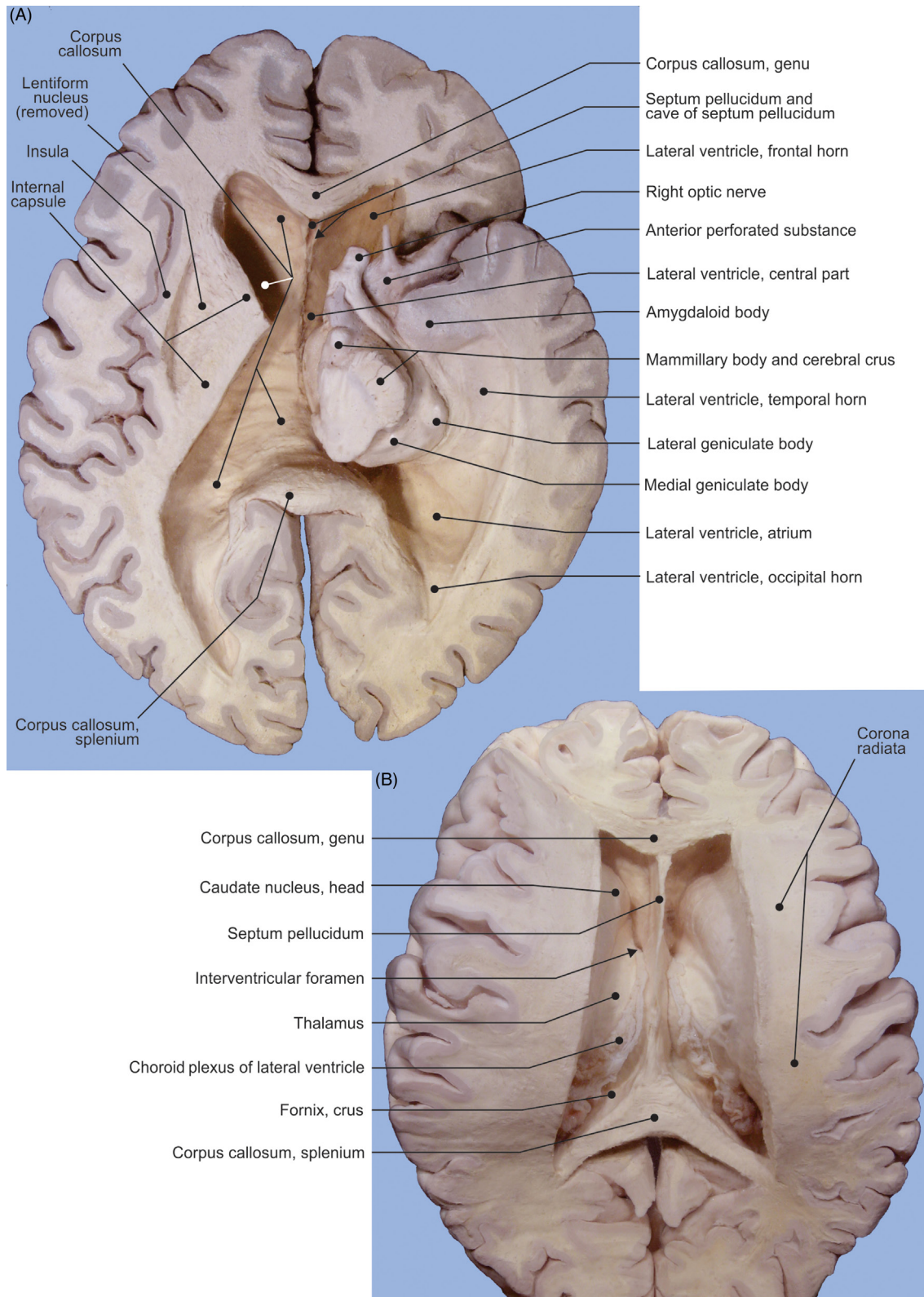


FIGURE 7.14 Dissected lateral ventricles. Views from (A) below and (B) from above.

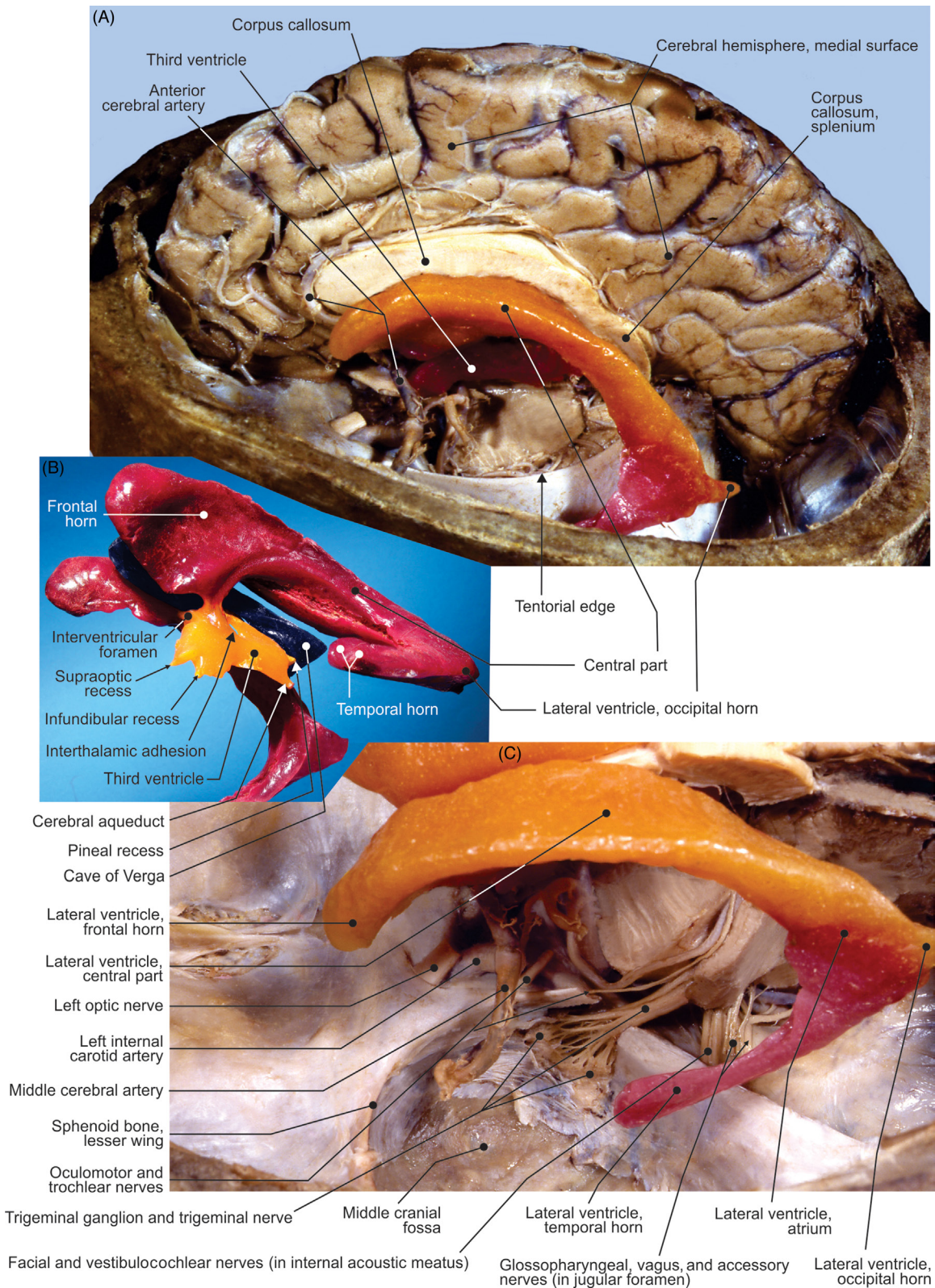


FIGURE 7.15 (A–C) Different views of the lateral ventricle dissected and filled with acrylic cast.

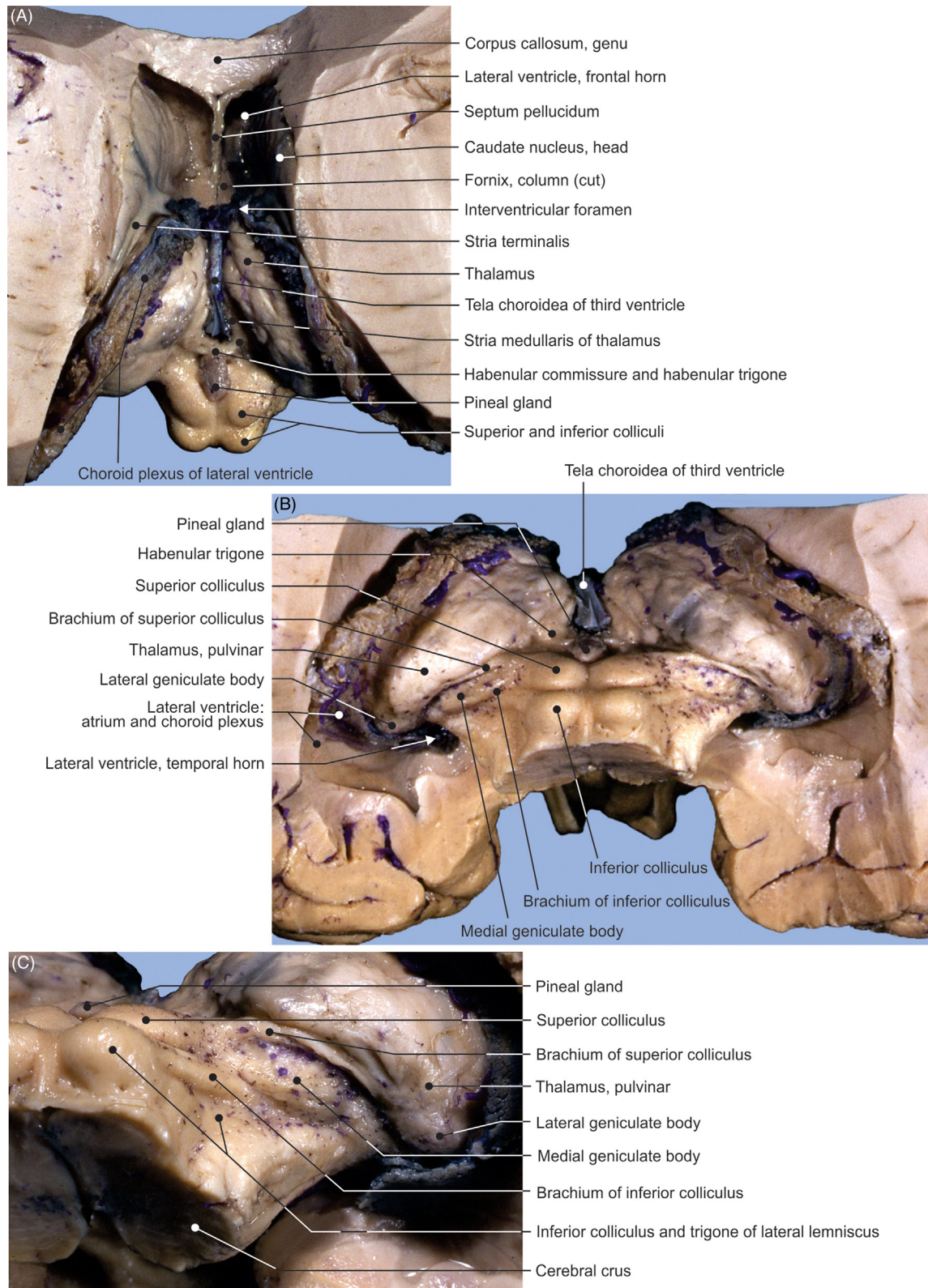


FIGURE 7.16 Dissection of the thalamus and mesencephalon. View from (A) above, (B) behind, and (C) the lateral side.

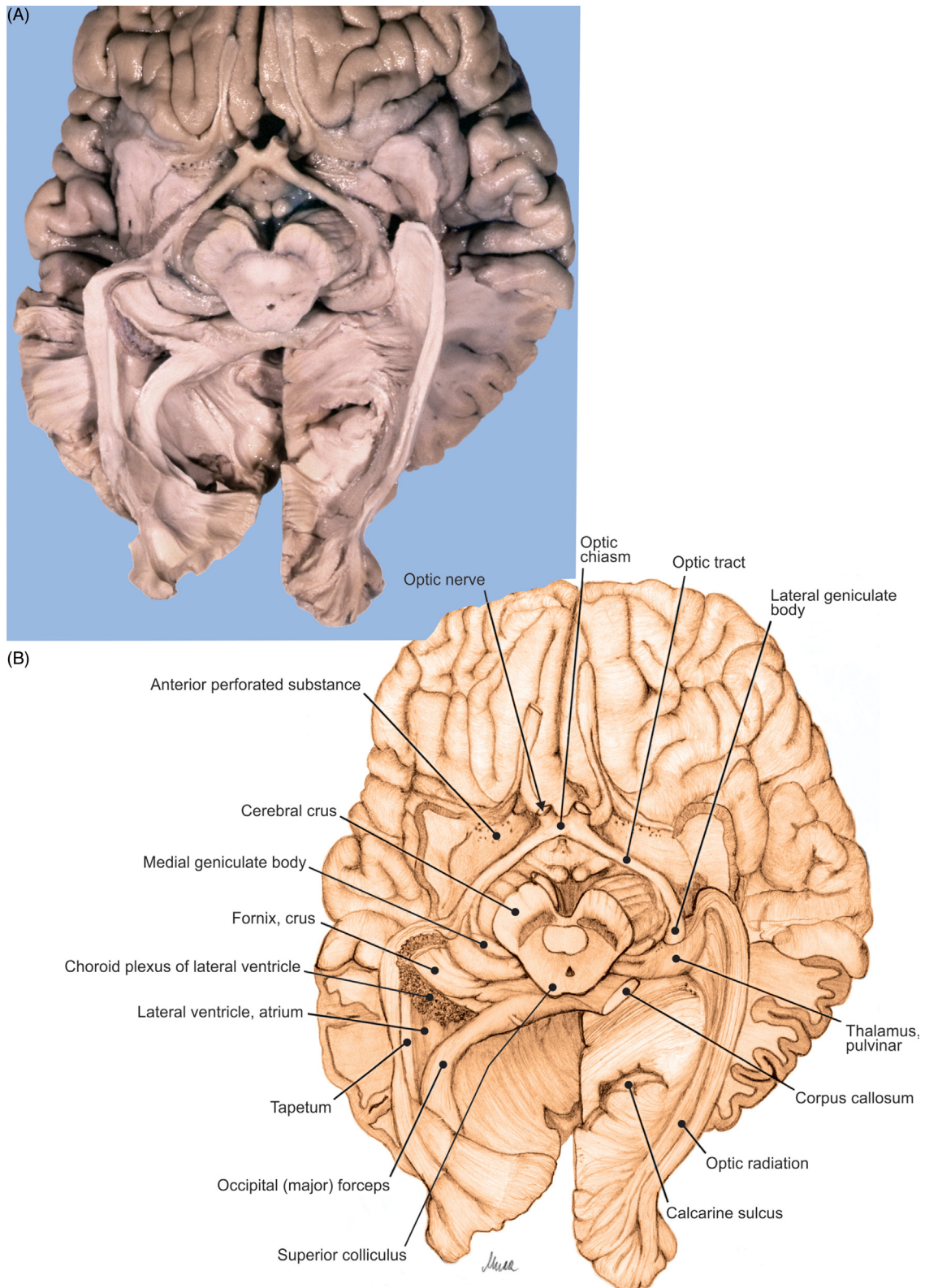


FIGURE 7.17 The encephalon, optic pathway. (A) Dissection of the inferior aspect and (B) illustration.

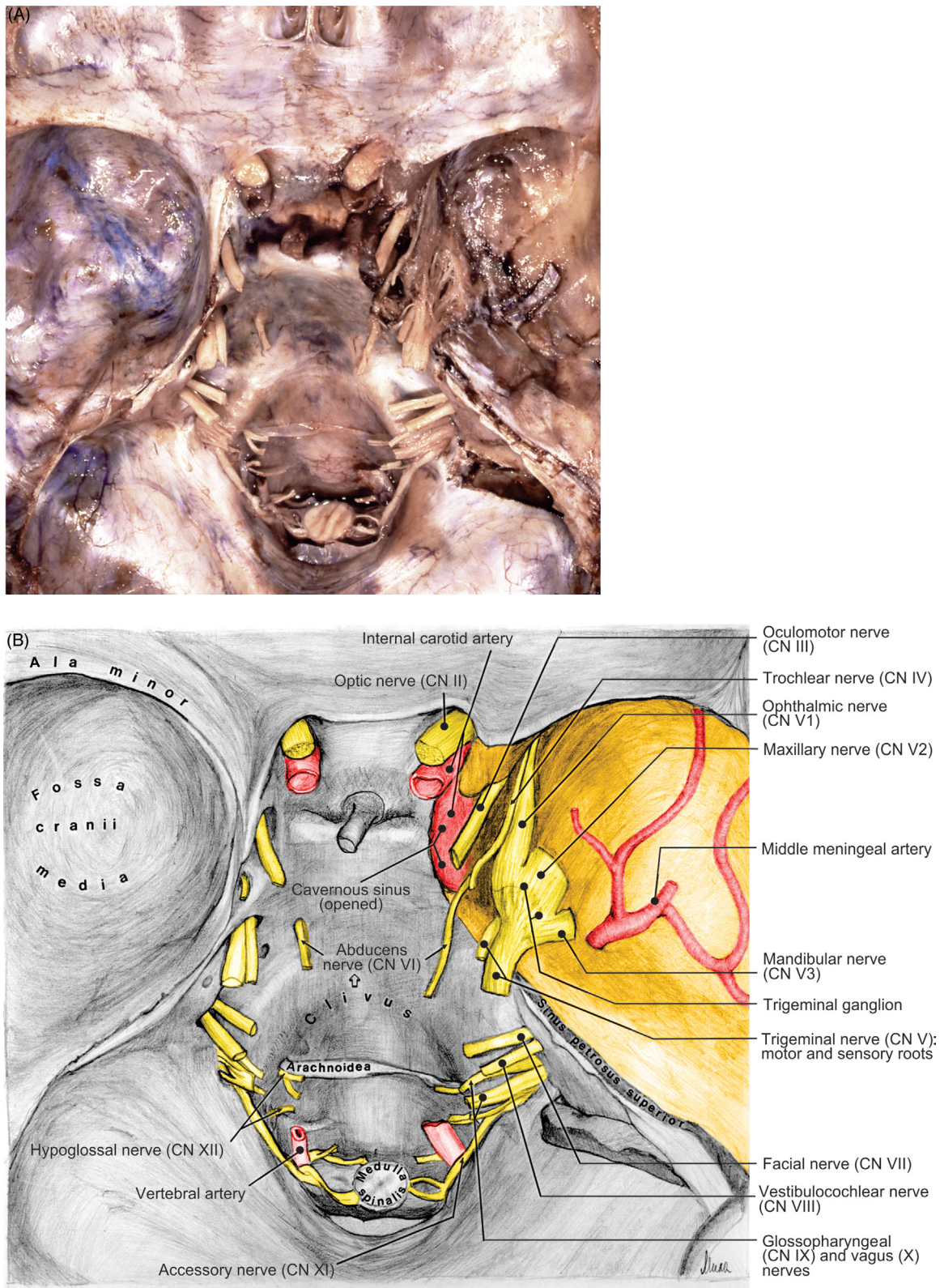


FIGURE 7.18 The base of the skull with passage of cranial nerves. (A) Dura mater removed from the right half of the cranial base and (B) illustration.

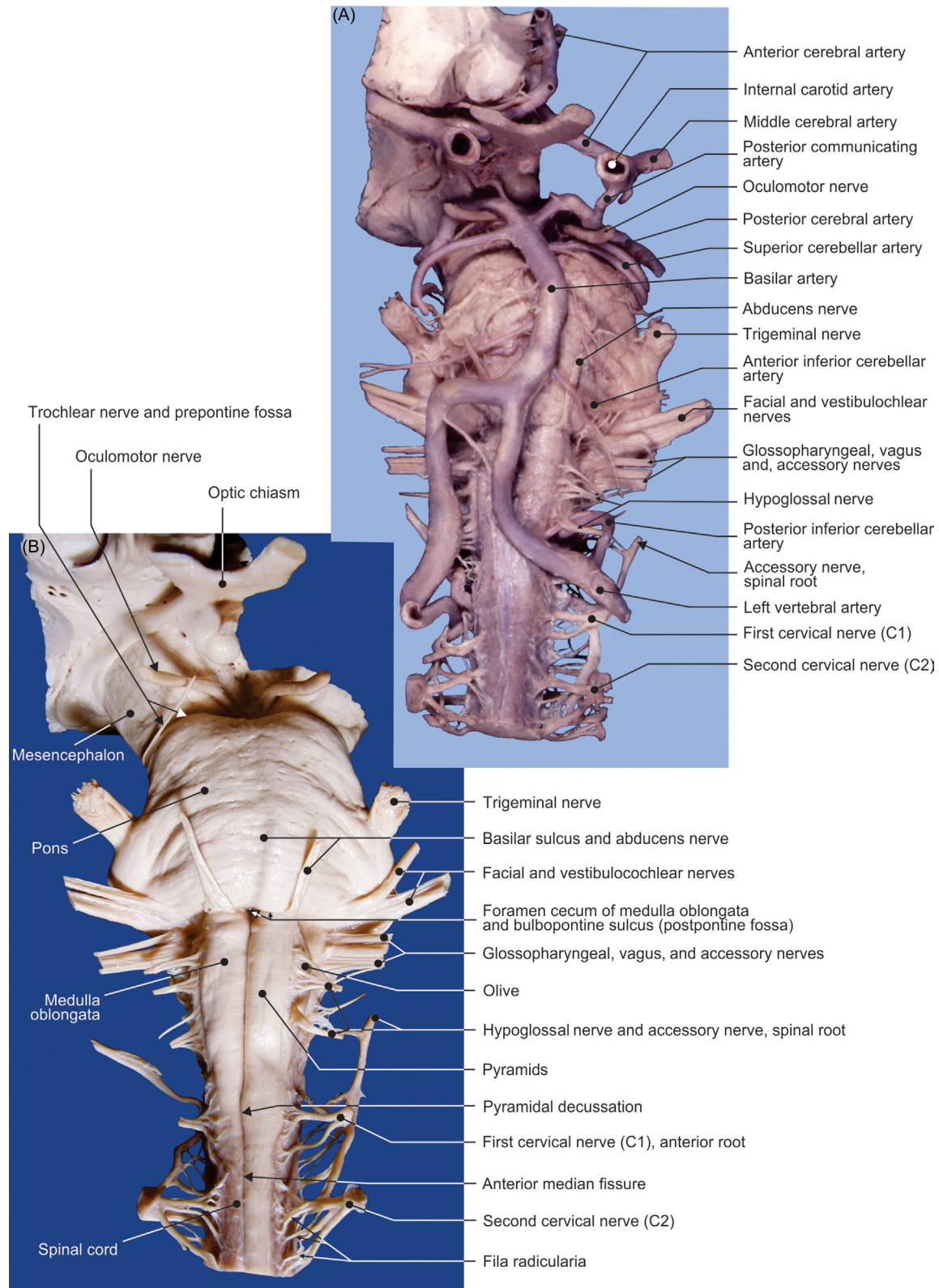


FIGURE 7.19 The brainstem. (A–B) Different views of the ventral aspect.

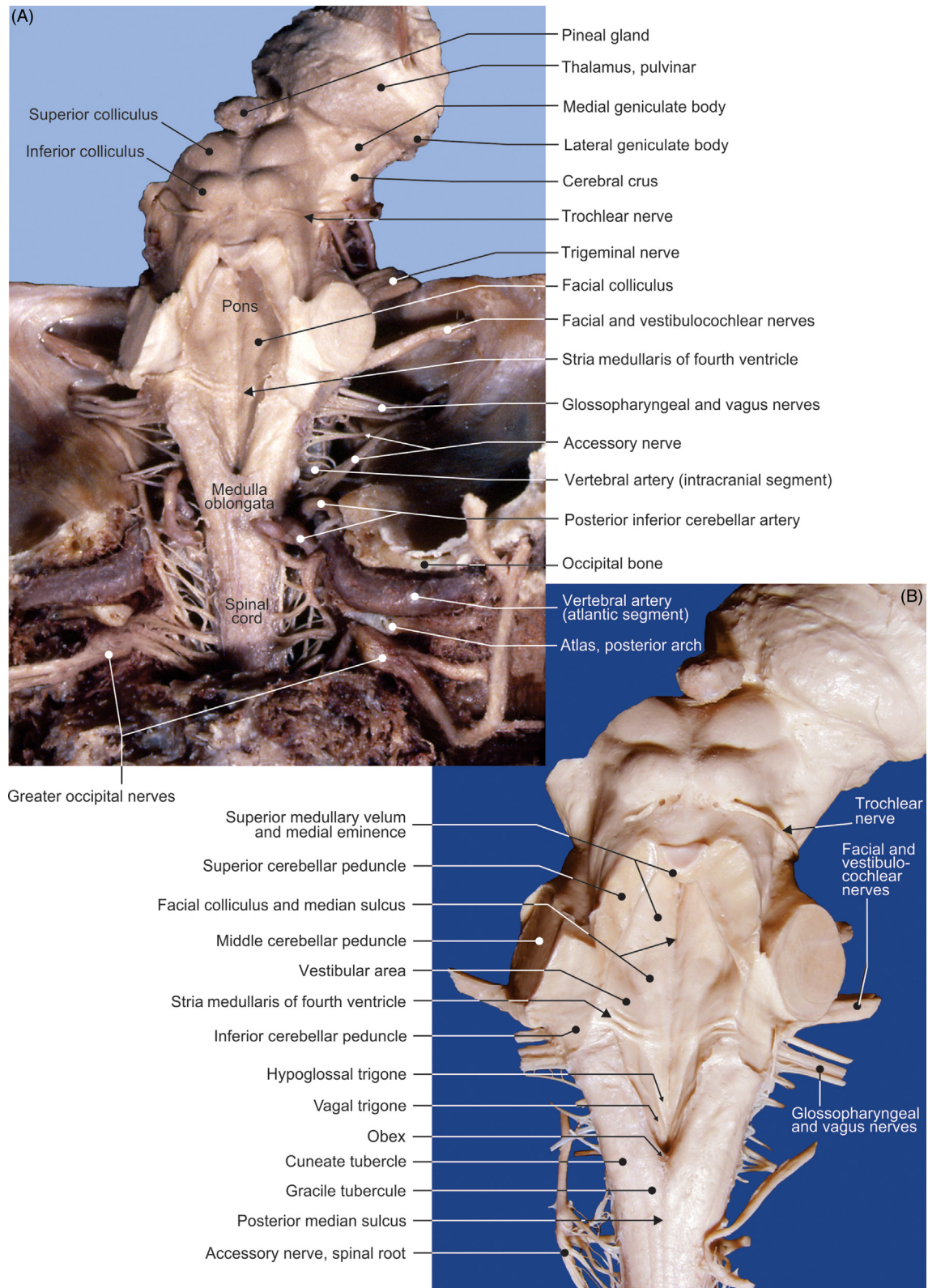


FIGURE 7.20 The brainstem. (A–B) Different views of the dorsal aspect.

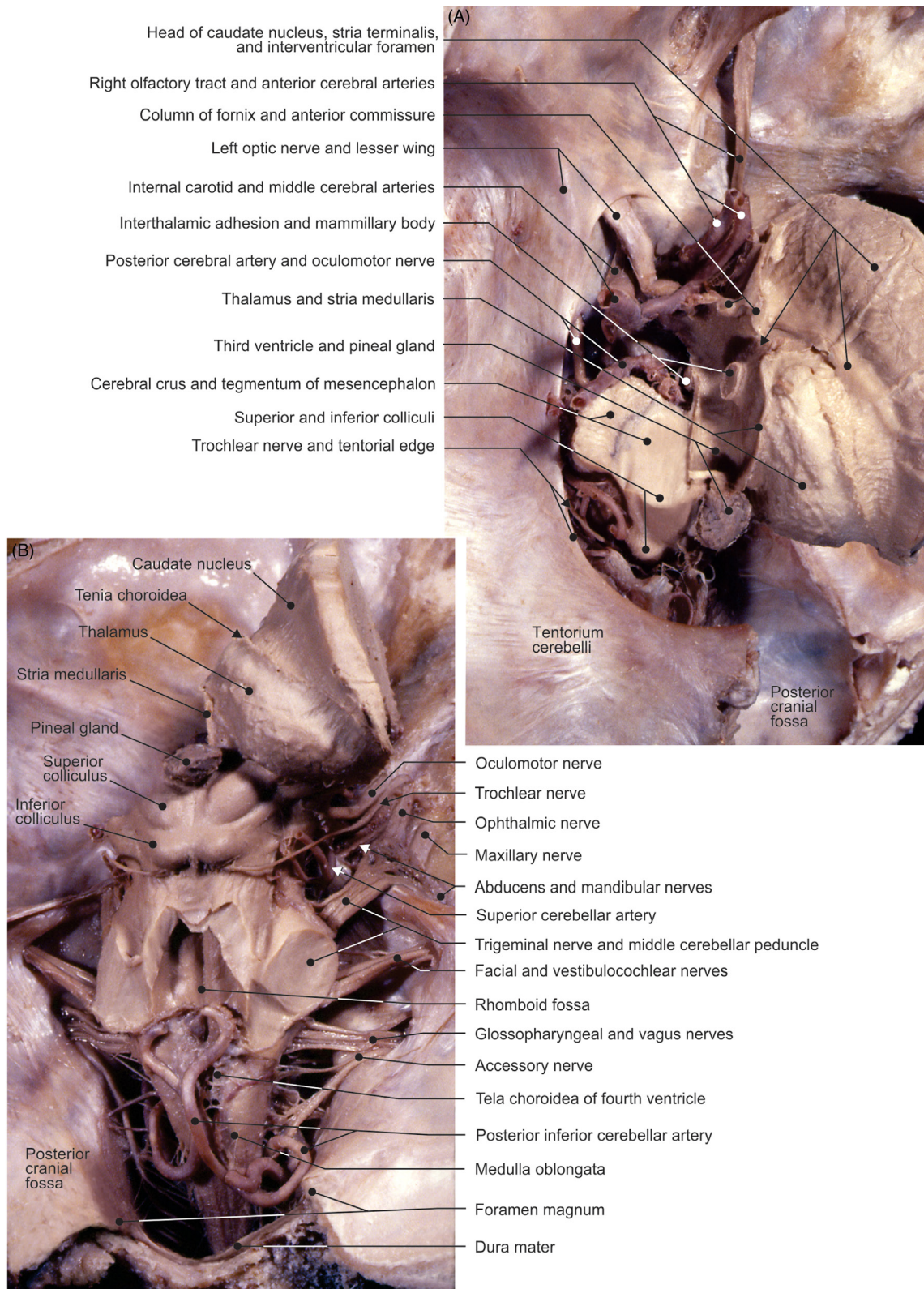


FIGURE 7.21 Dissection of the mesencephalon and right thalamus in situ. (A) View from above and (B) view from behind.

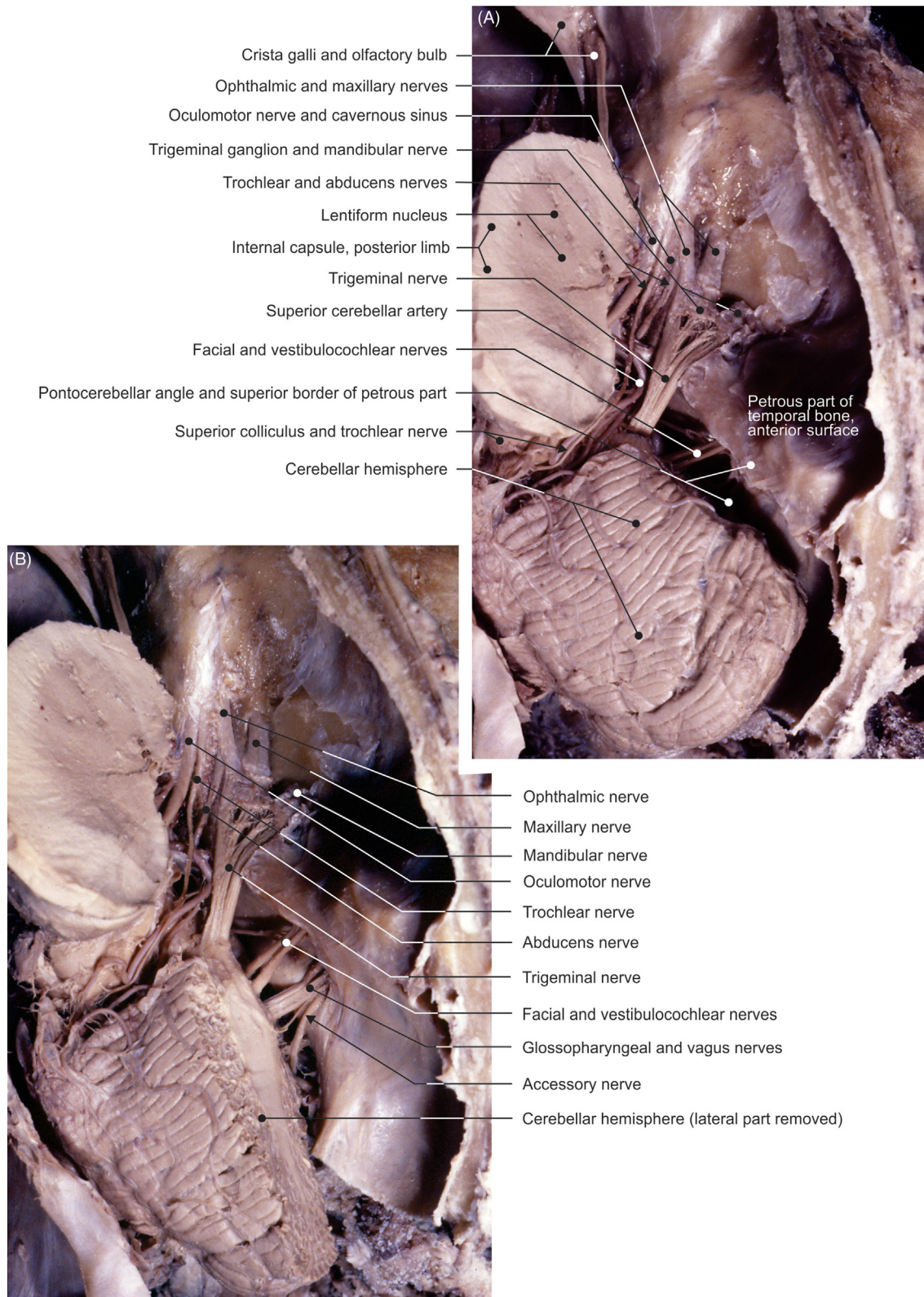


FIGURE 7.22 (A–B) Different views of the dissection of the cavernous sinus and pontocerebellar angle.

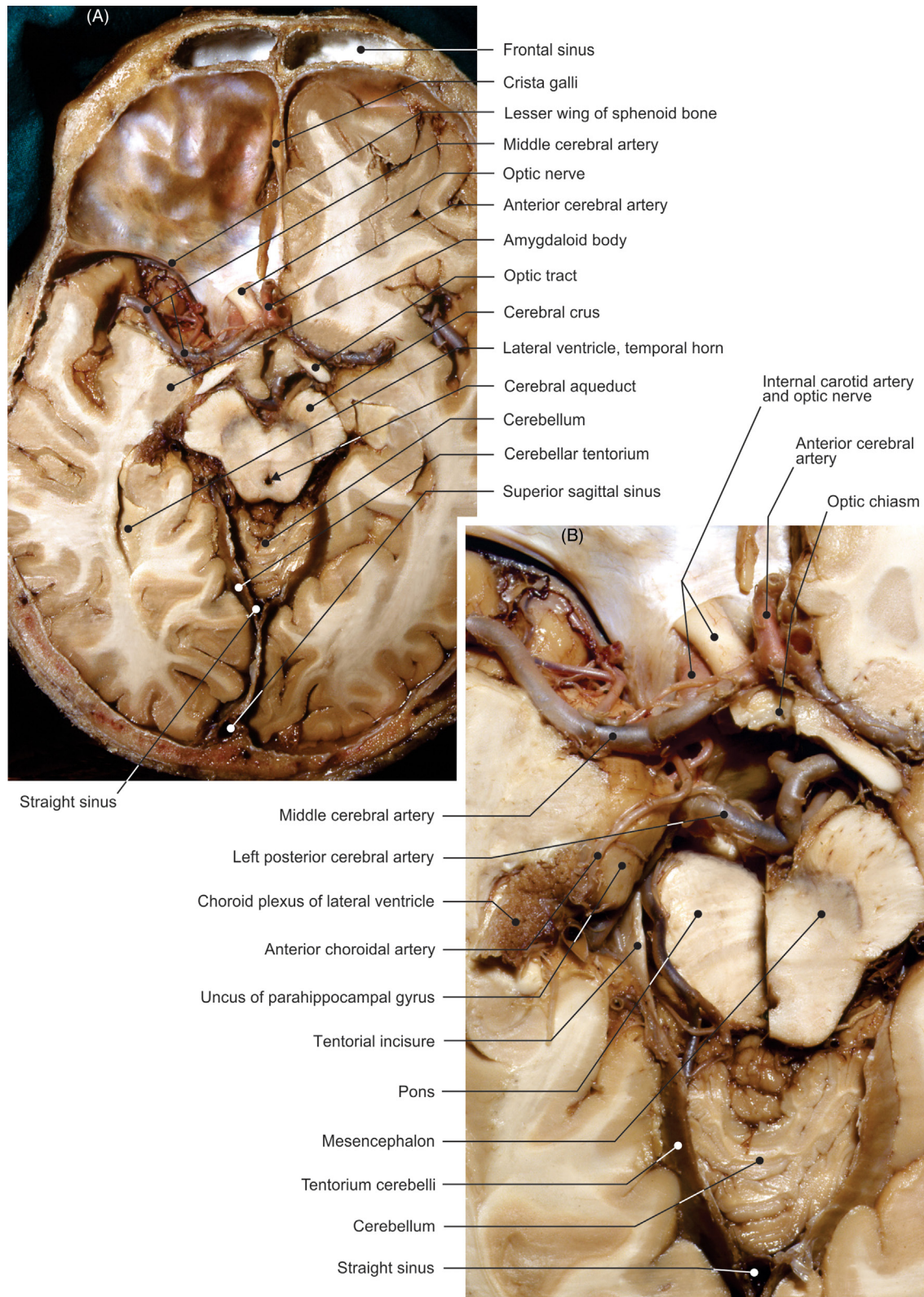


FIGURE 7.23 (A–B) Transverse sections of the head: dissections.

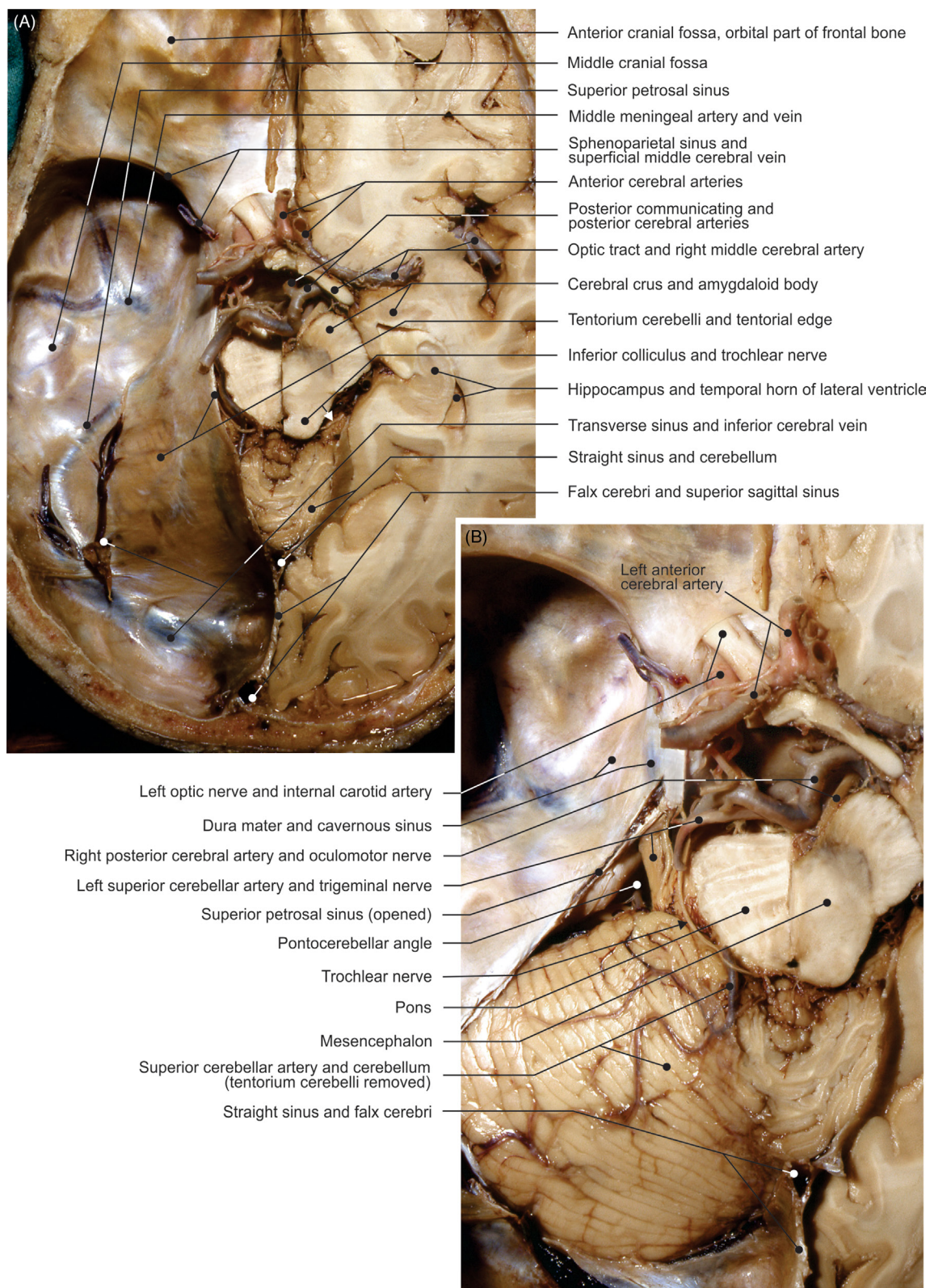


FIGURE 7.24 (A–B) Transverse sections of the head: dissections.

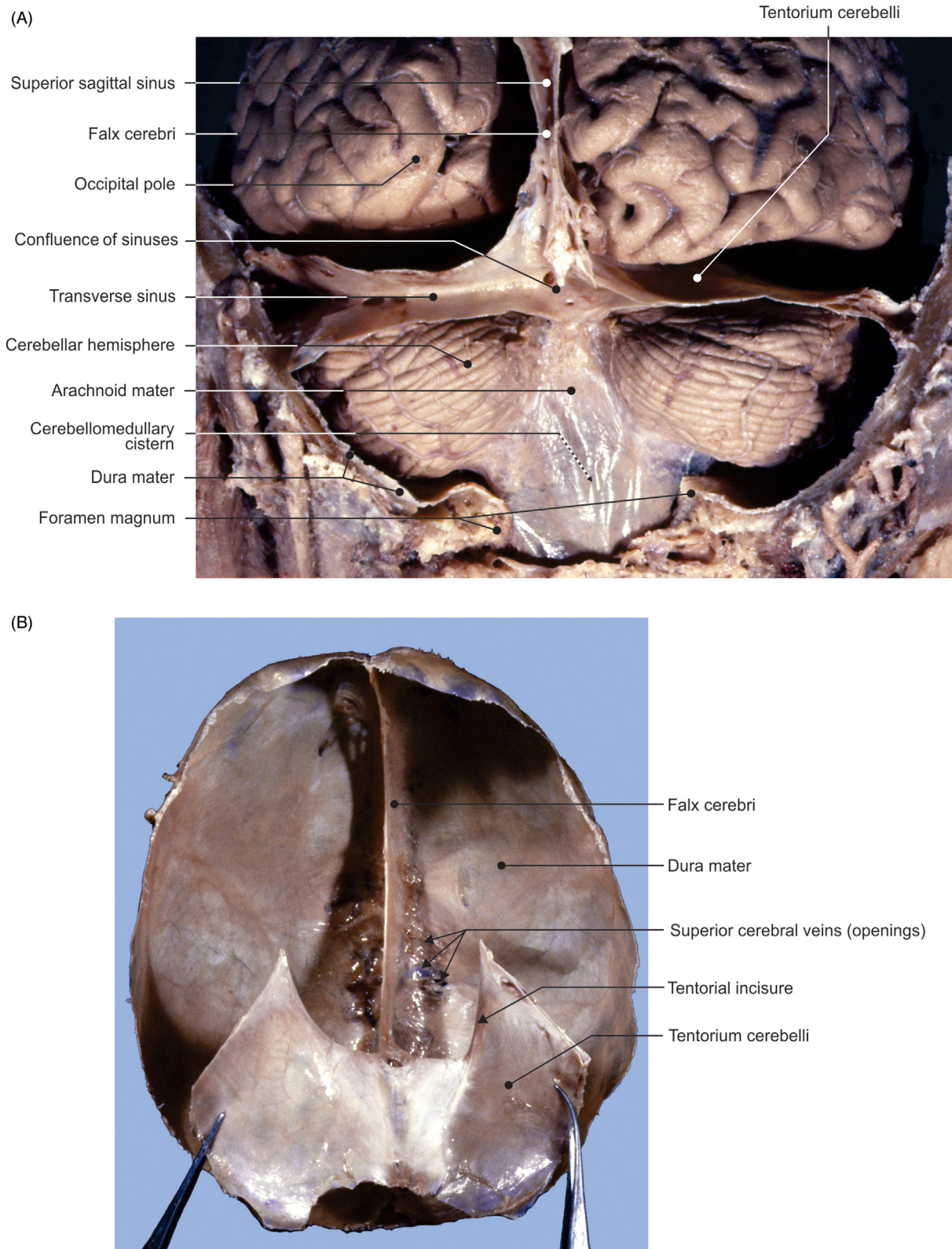


FIGURE 7.25 (A) The telencephalon and cerebellum in situ: view from behind. (B) Isolated cranial dura mater: view from below.

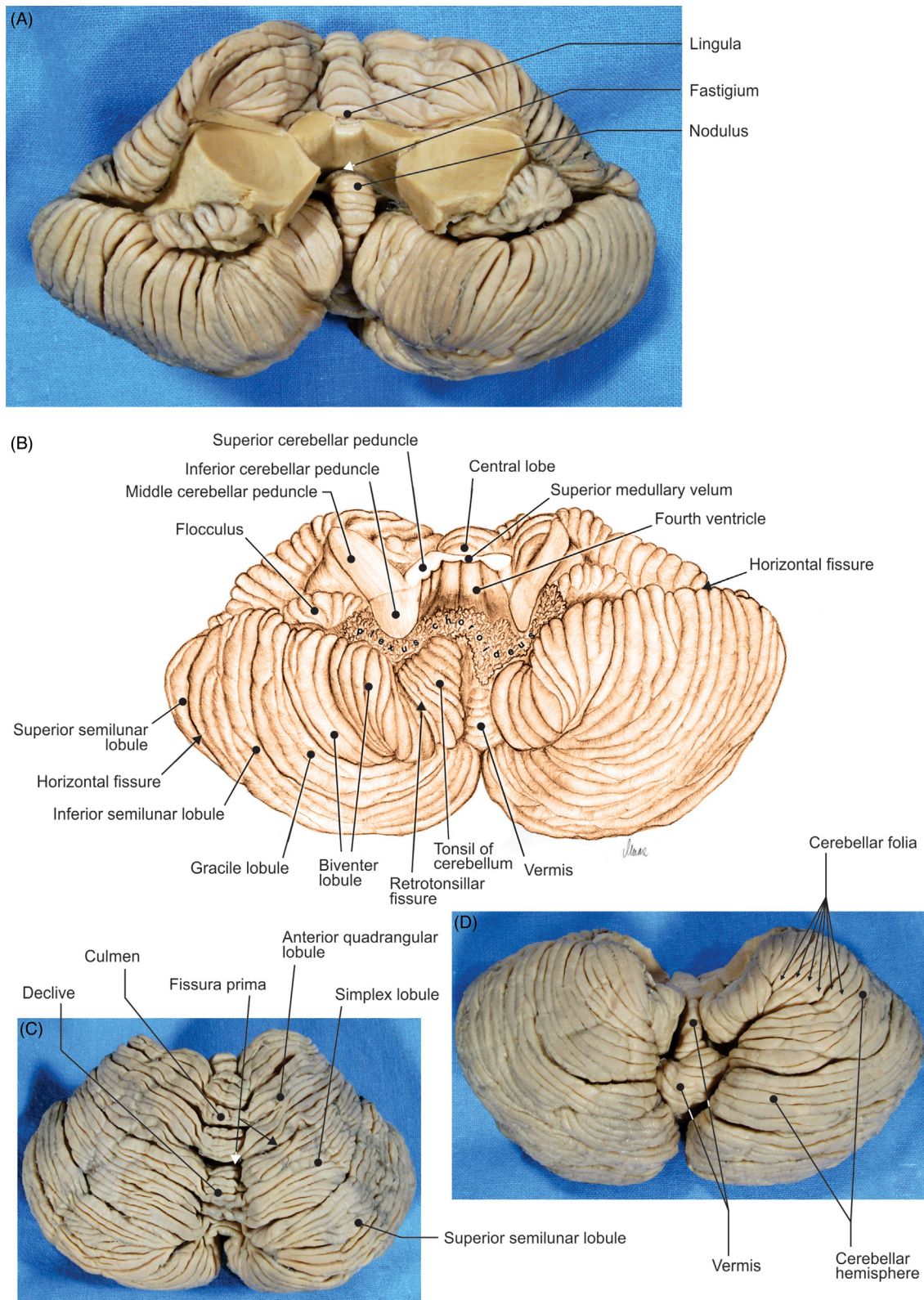


FIGURE 7.26 The cerebellum. (A) View from the front, (C) view from above, and (D) view from below. (B) Illustration of the cerebellum.

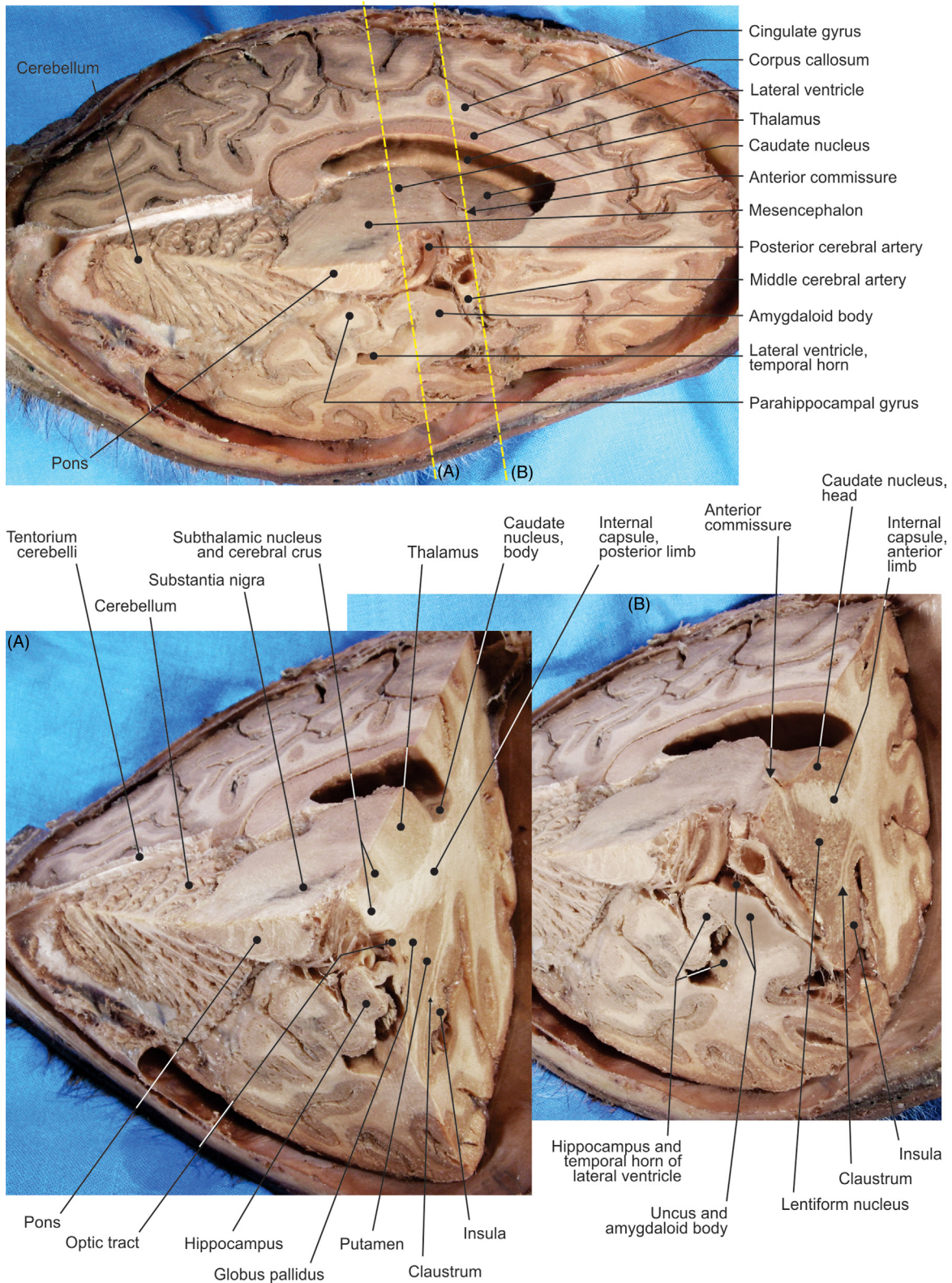


FIGURE 7.27 Different views of the sections of the cerebral hemisphere. (A) and (B) are the frontal sections.

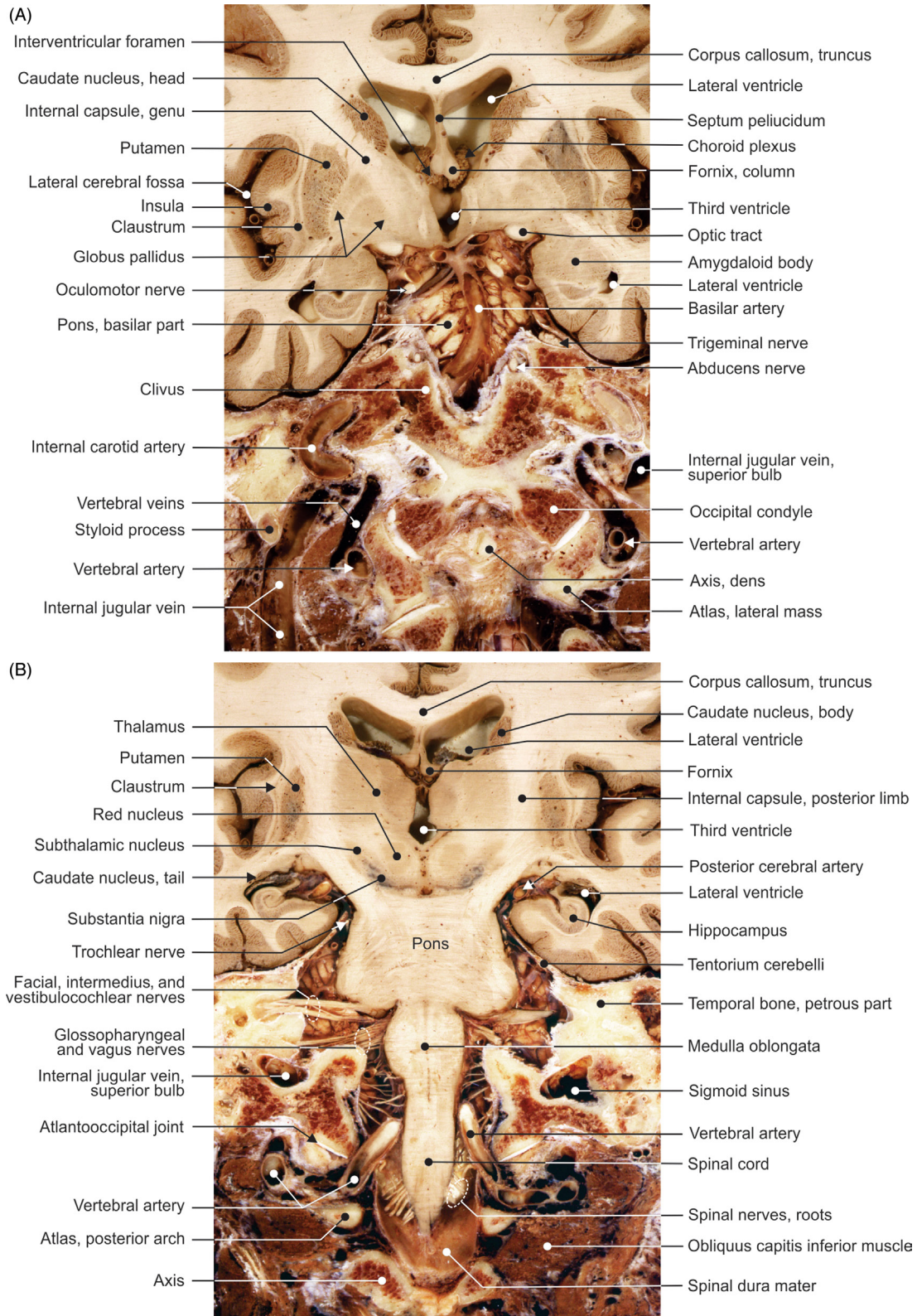


FIGURE 7.28 (A–B) Different views of the frontal sections of the third ventricle.

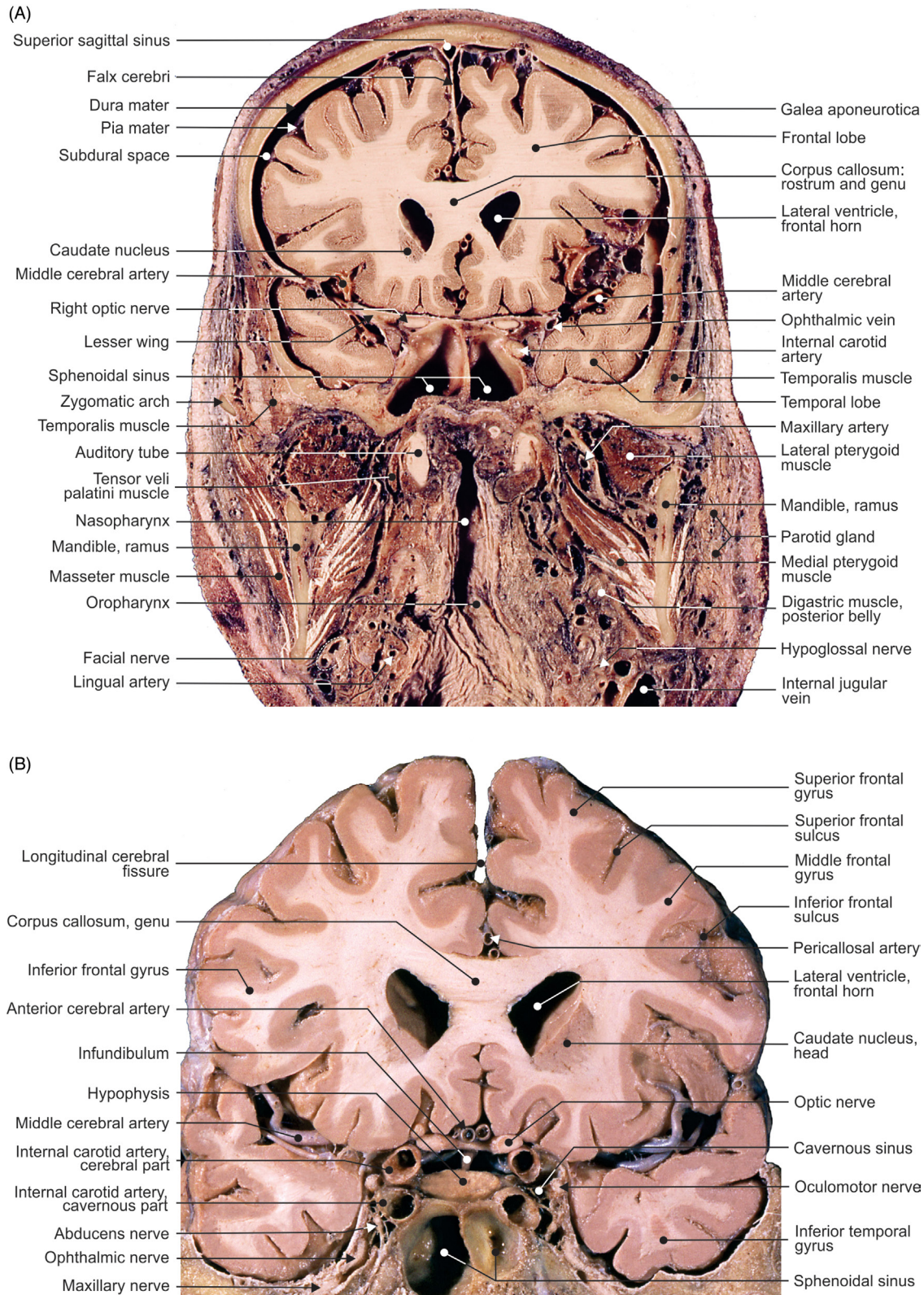


FIGURE 7.29 (A–B) Different views of the frontal sections of the anterior horn of the lateral ventricle.

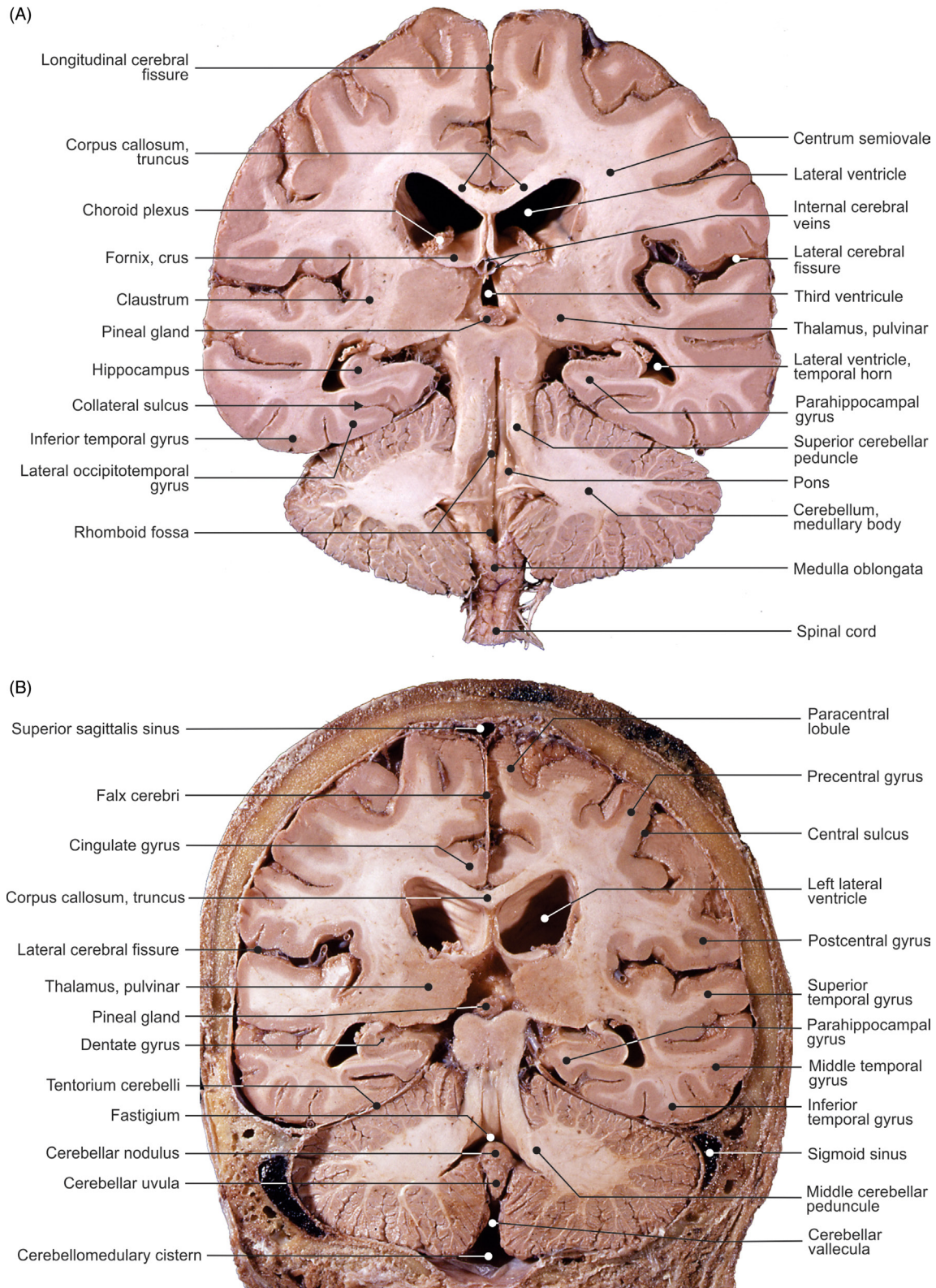


FIGURE 7.30 The (A) anterior and (B) posterior frontal sections of the fourth ventricle and epithalamus.

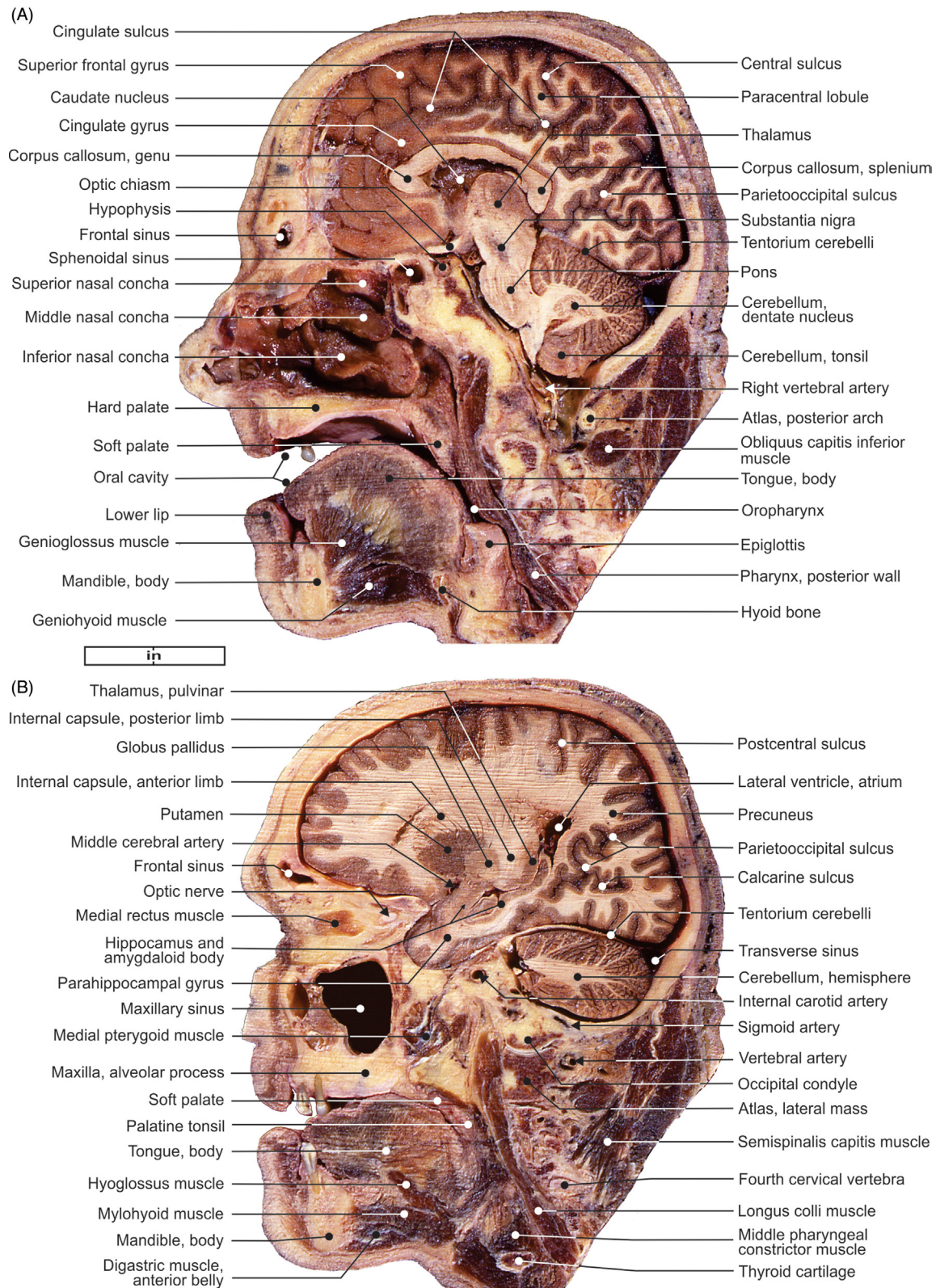


FIGURE 7.31 The sagittal sections of the (A) nasal cavity and (B) maxillary sinus.

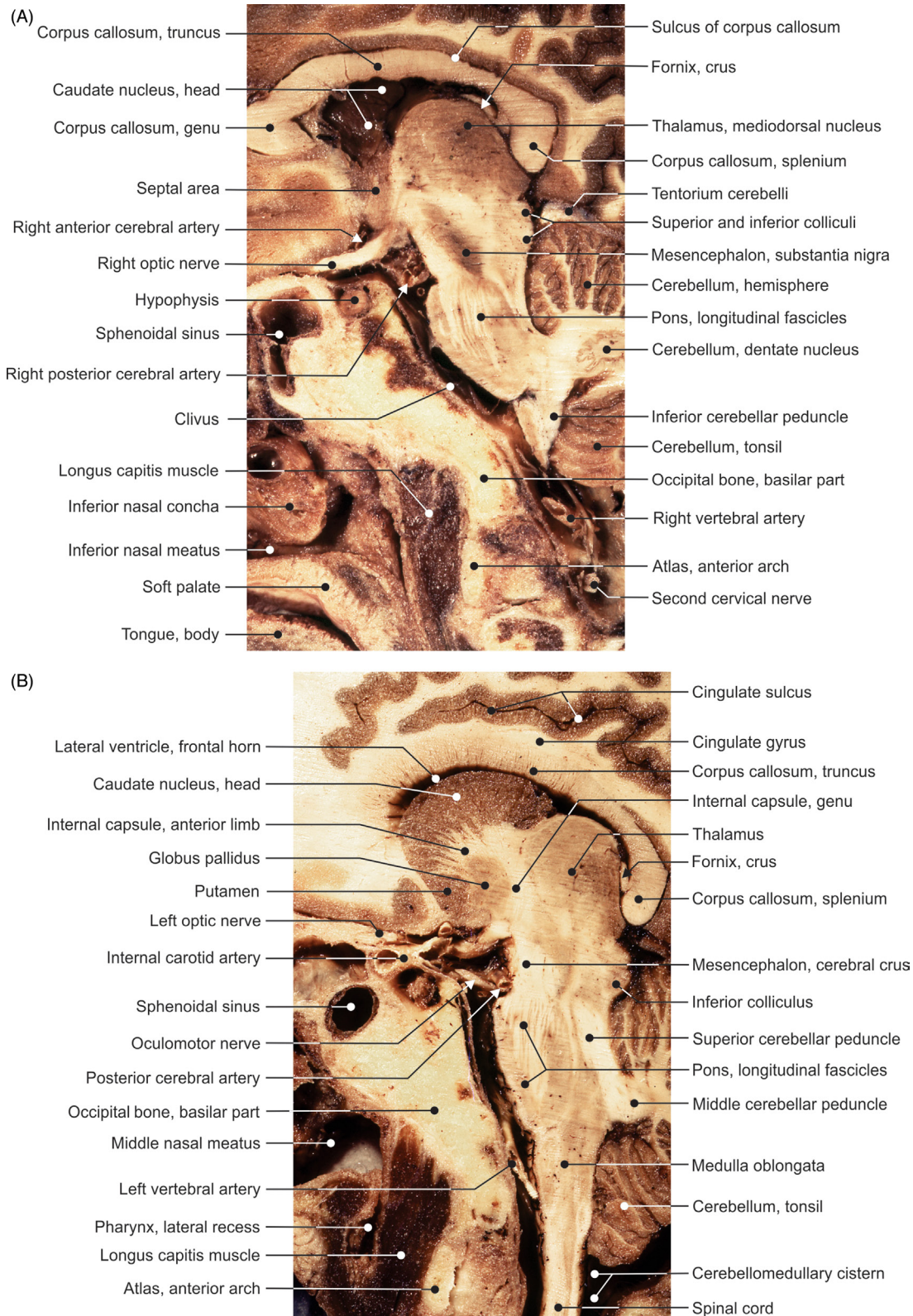


FIGURE 7.32 (A–B) Different views of the sagittal sections of the cerebral hypophysis.

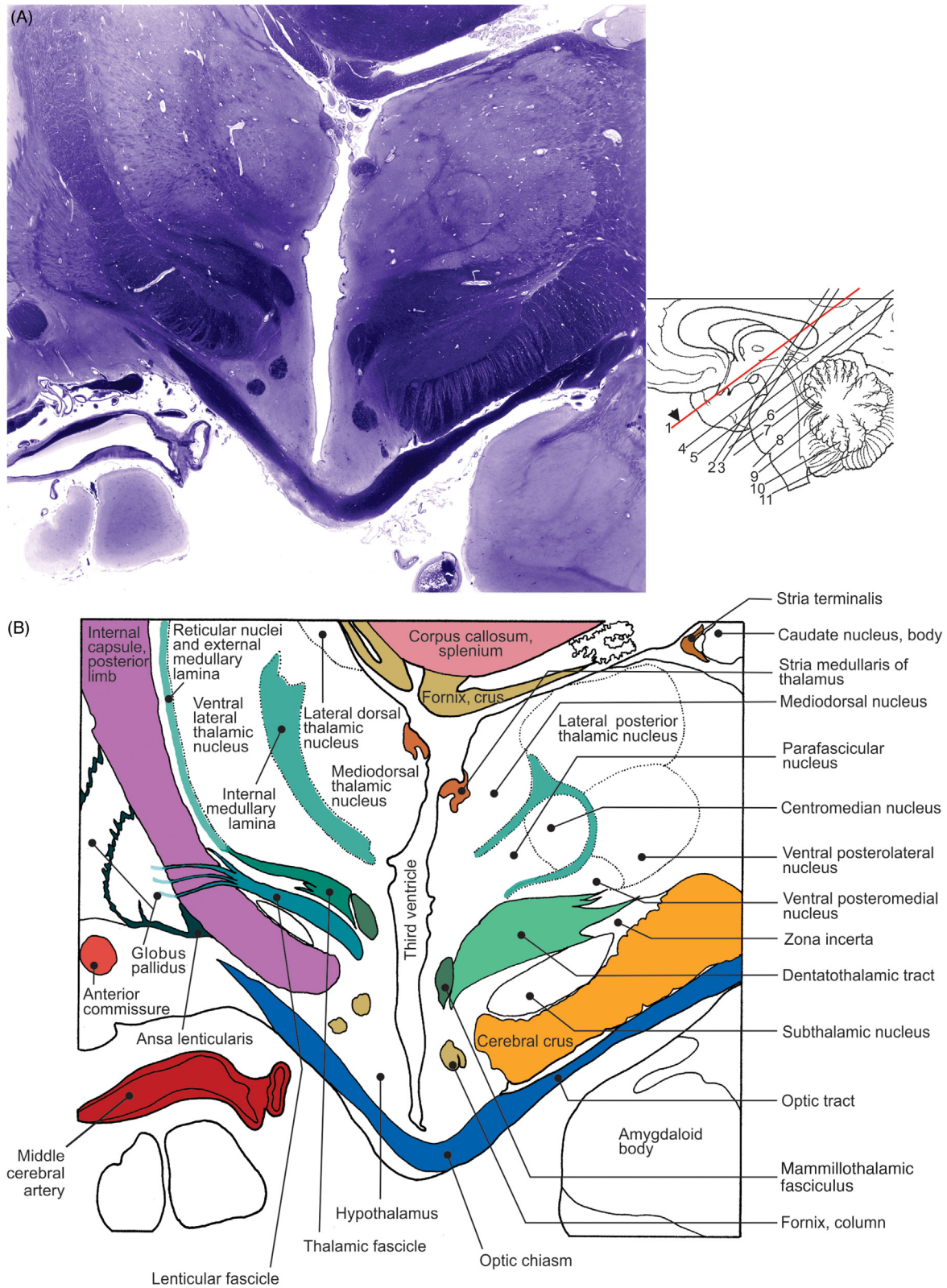


FIGURE 7.33 Transverse section of the brain at the level of optic chiasm and optic tract. (A) Histology and (B) illustration.

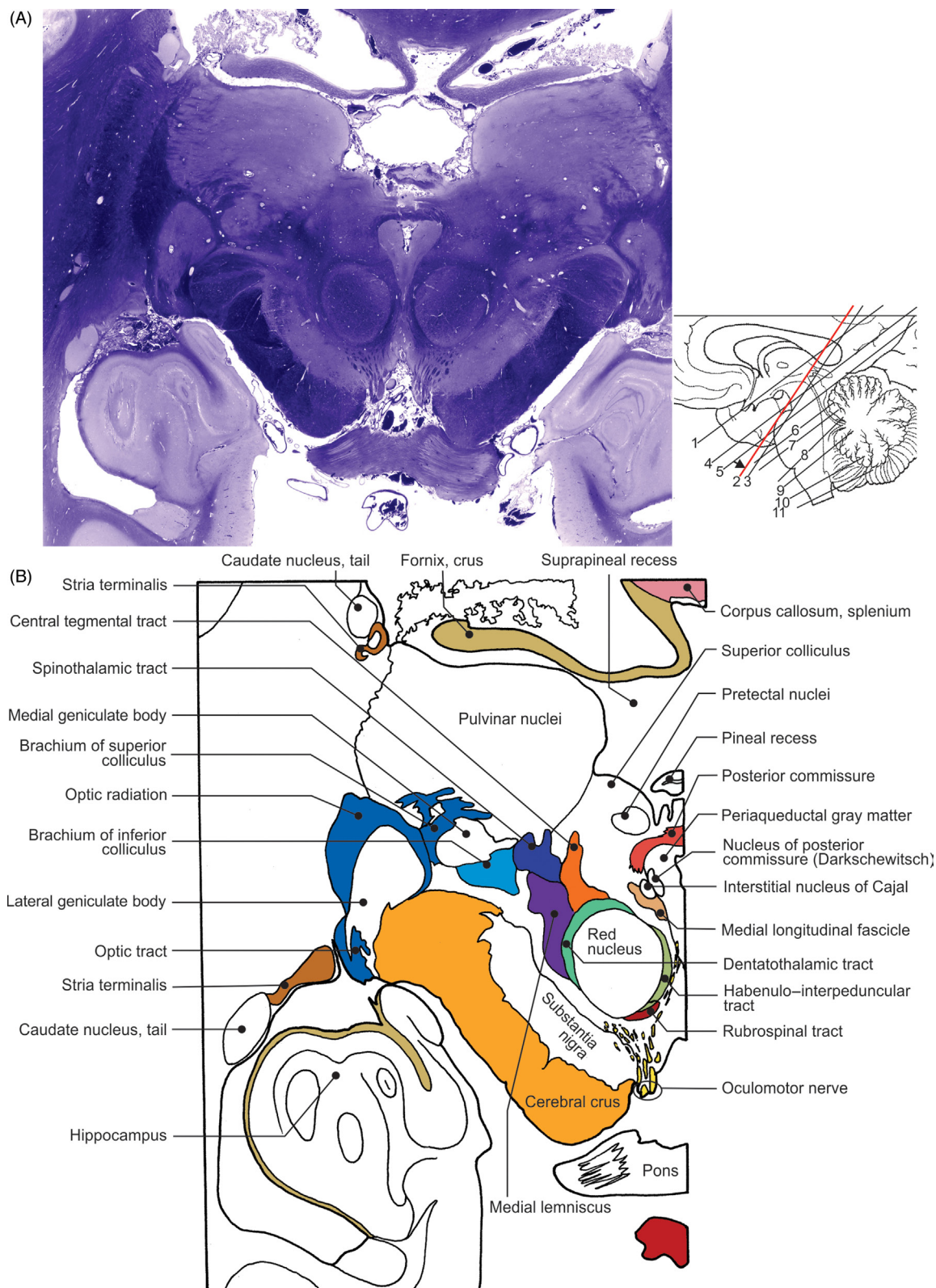


FIGURE 7.34 Transverse section of the brain at the level of red nucleus. (A) Histology and (B) illustration.

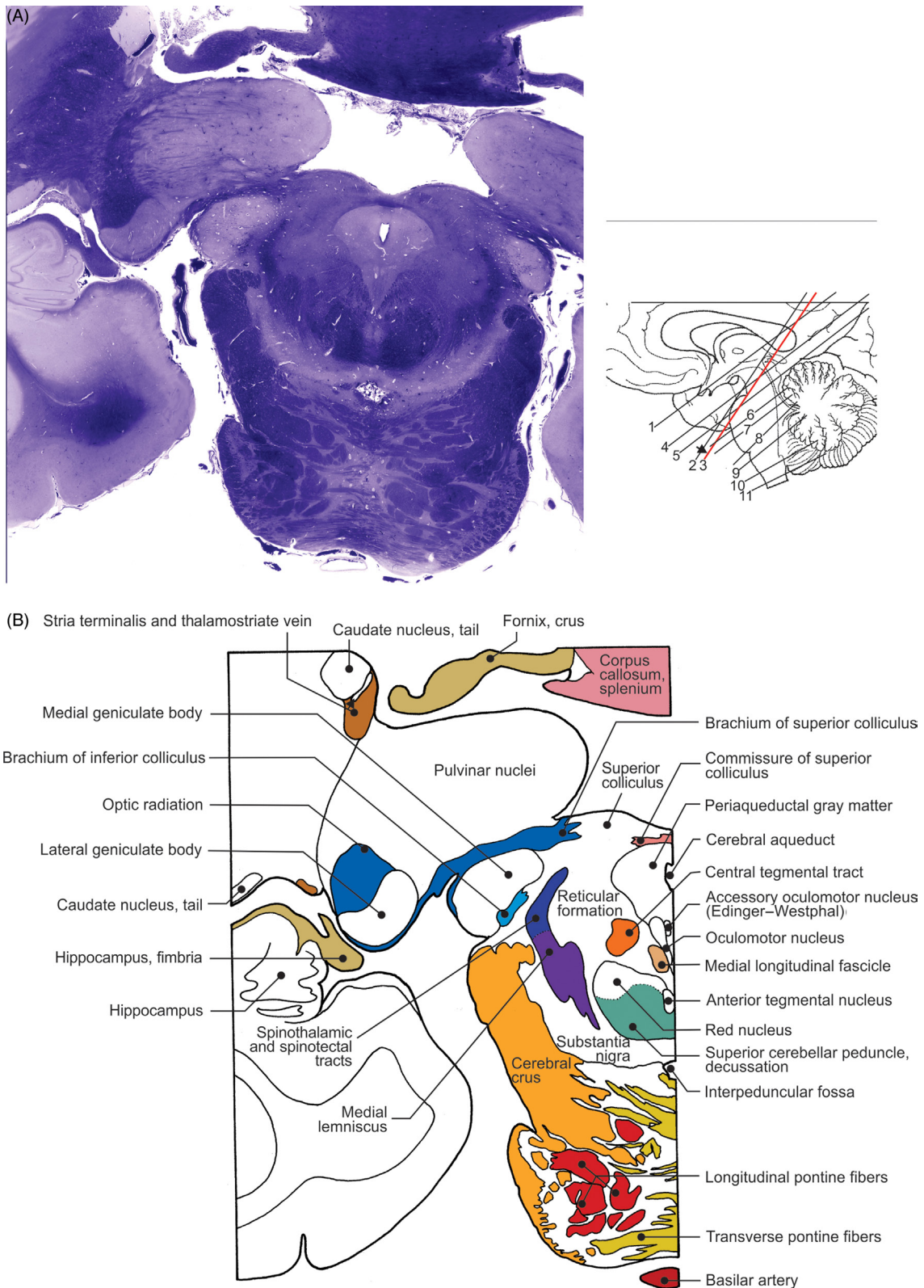


FIGURE 7.35 Transverse section of the brain at the level of lateral and medial geniculate bodies. (A) Histology and (B) illustration.

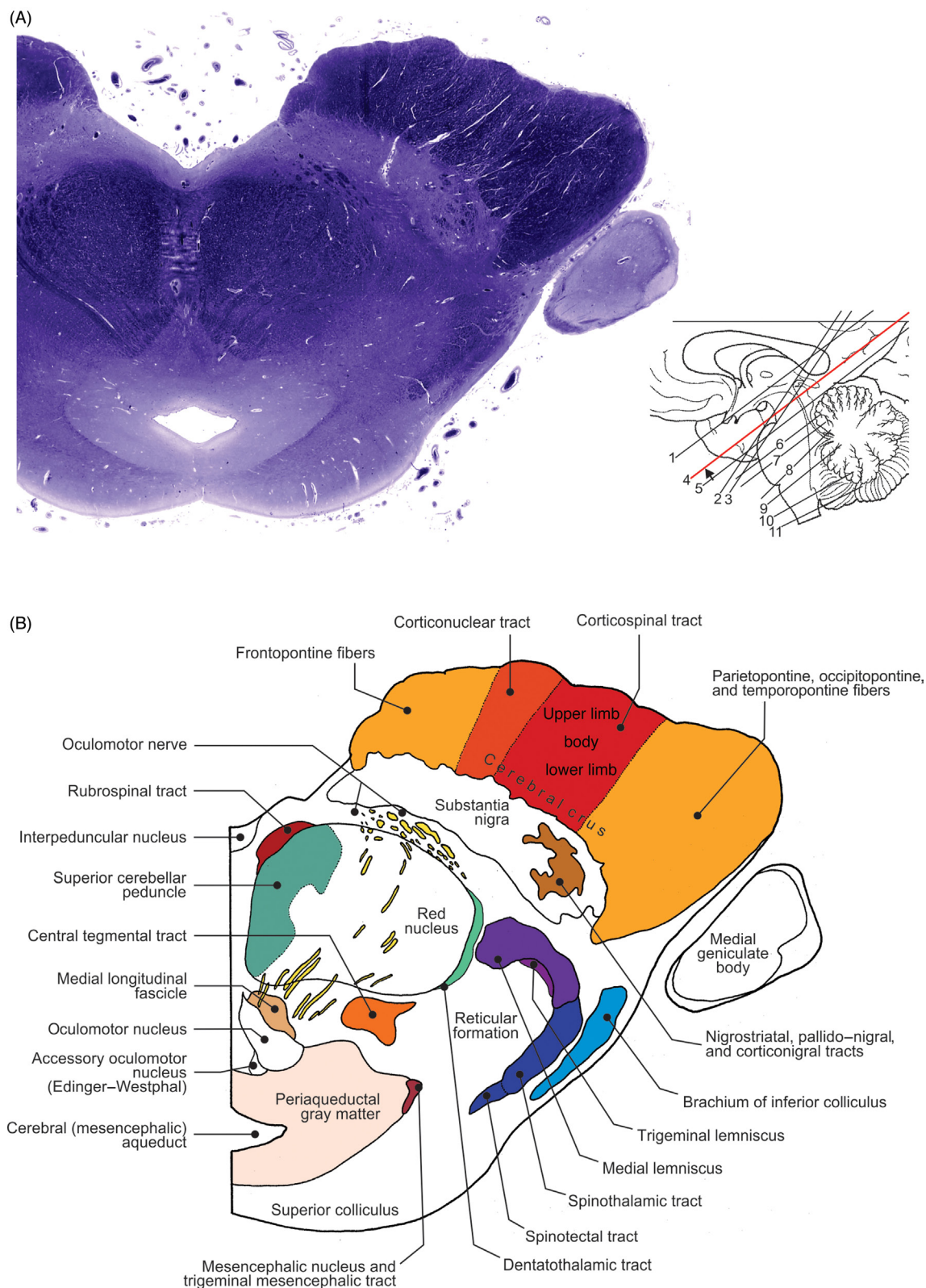


FIGURE 7.36 Transverse section of the mesencephalon at the level of the superior colliculus. (A) Histology and (B) illustration.

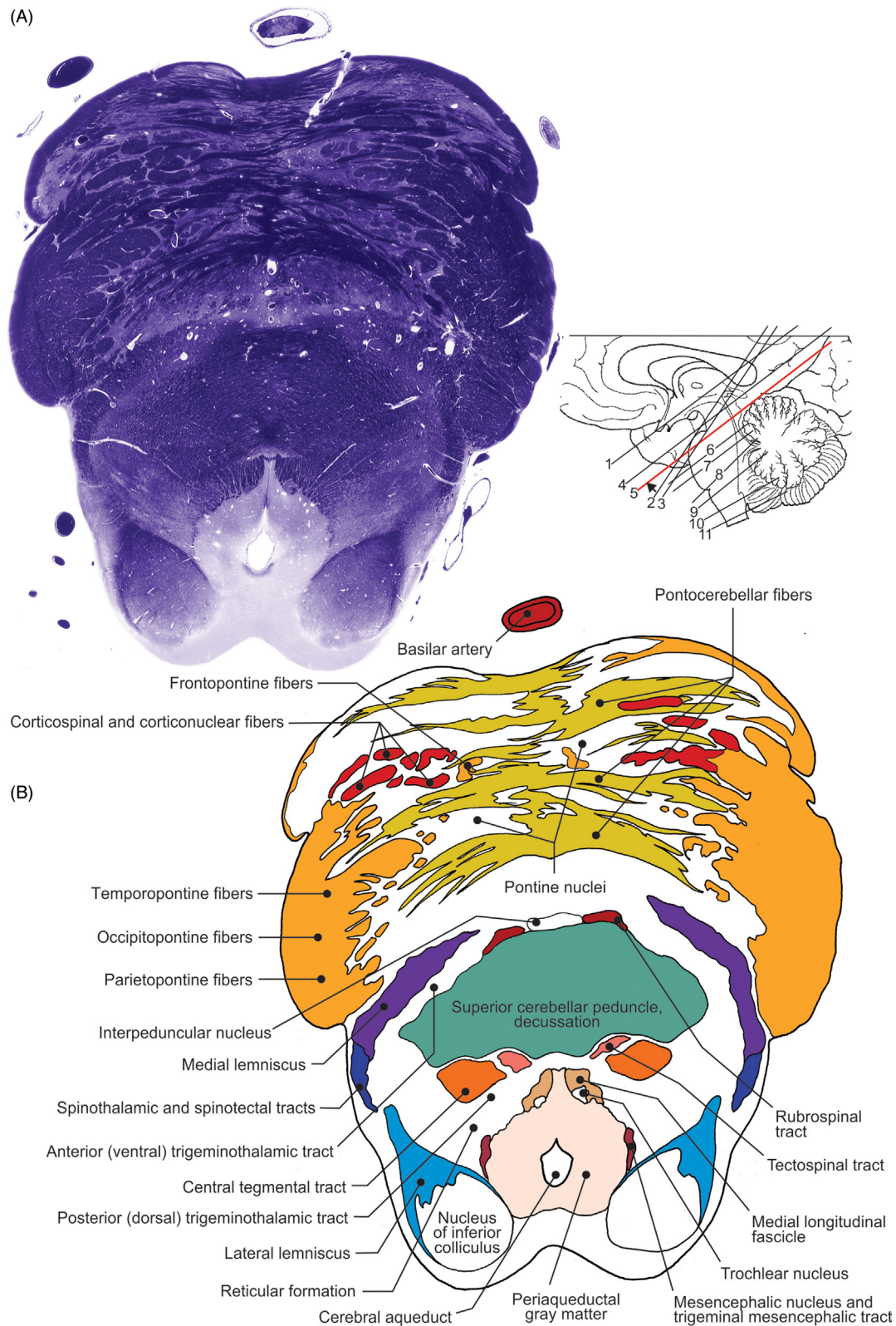


FIGURE 7.37 Transverse section of the pons and mesencephalon at the level of the inferior colliculus. (A) Histology and (B) illustration.

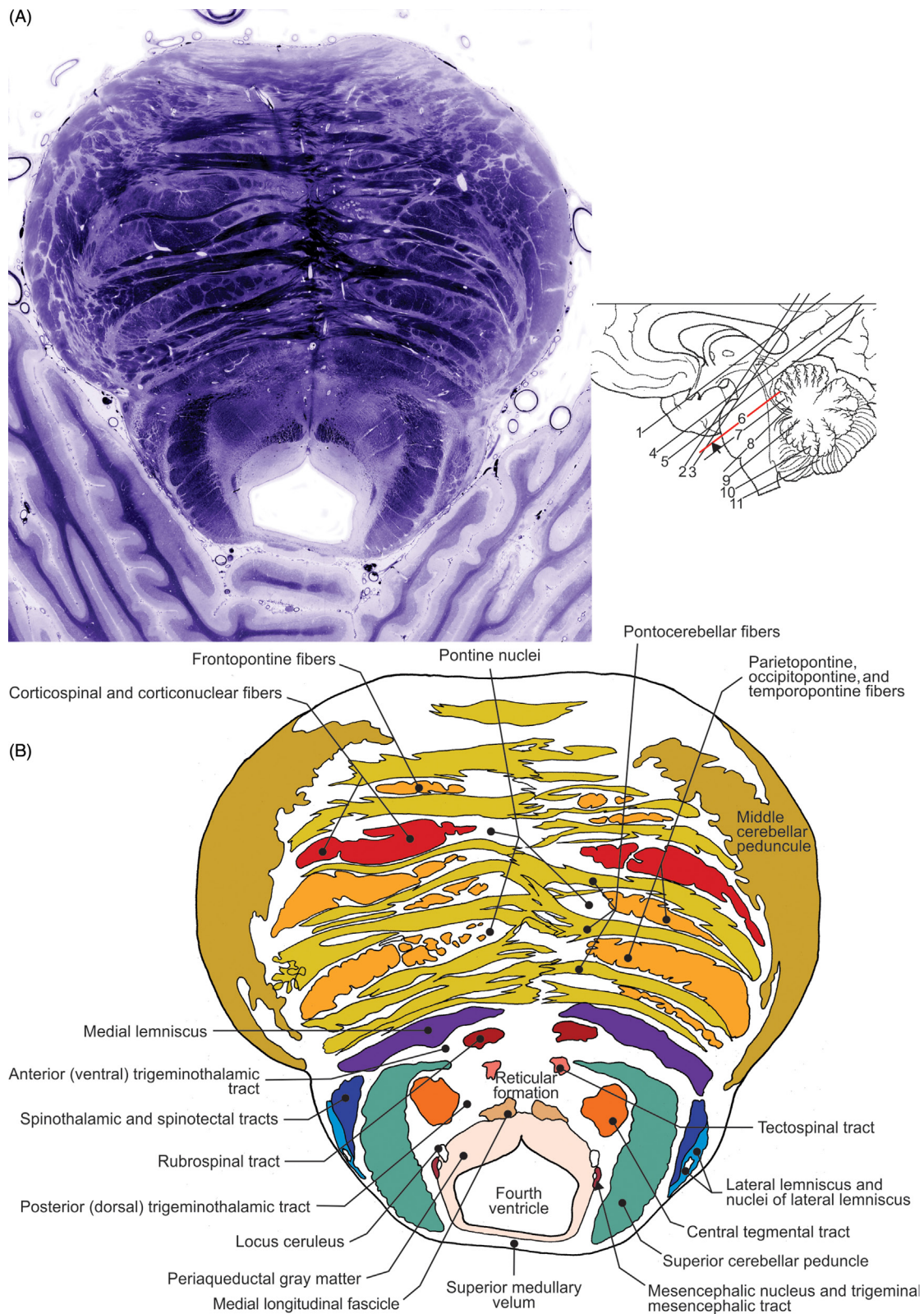
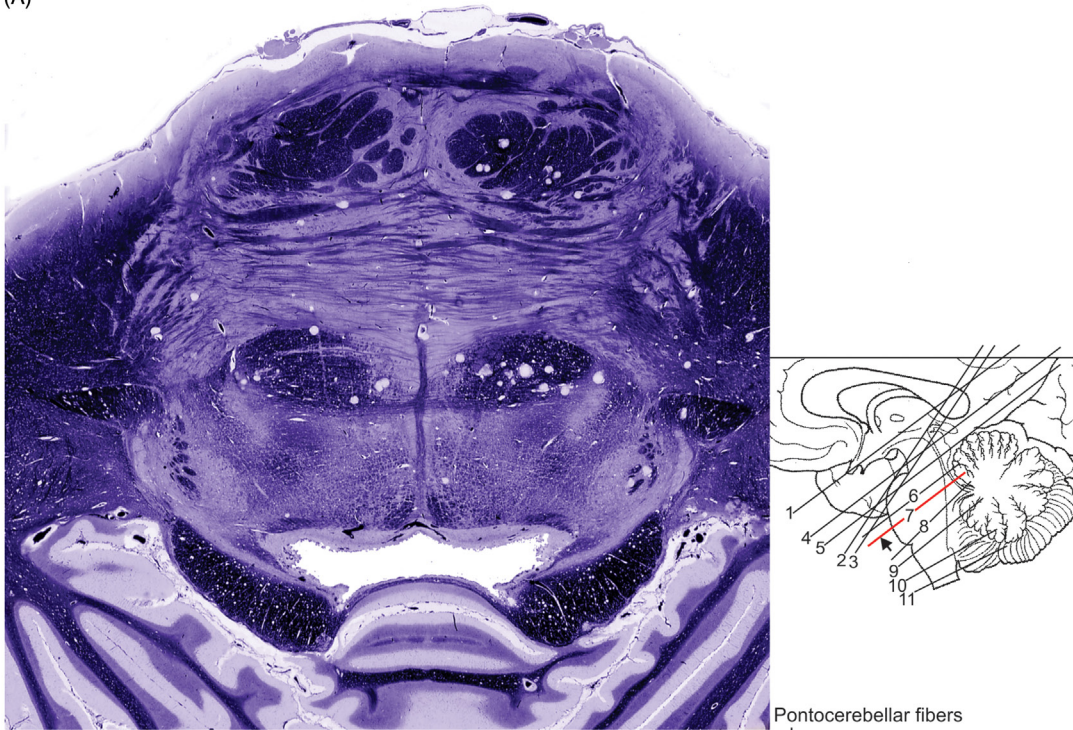


FIGURE 7.38 Transverse section of the upper segment of pons. (A) Histology and (B) illustration.

(A)



(B)

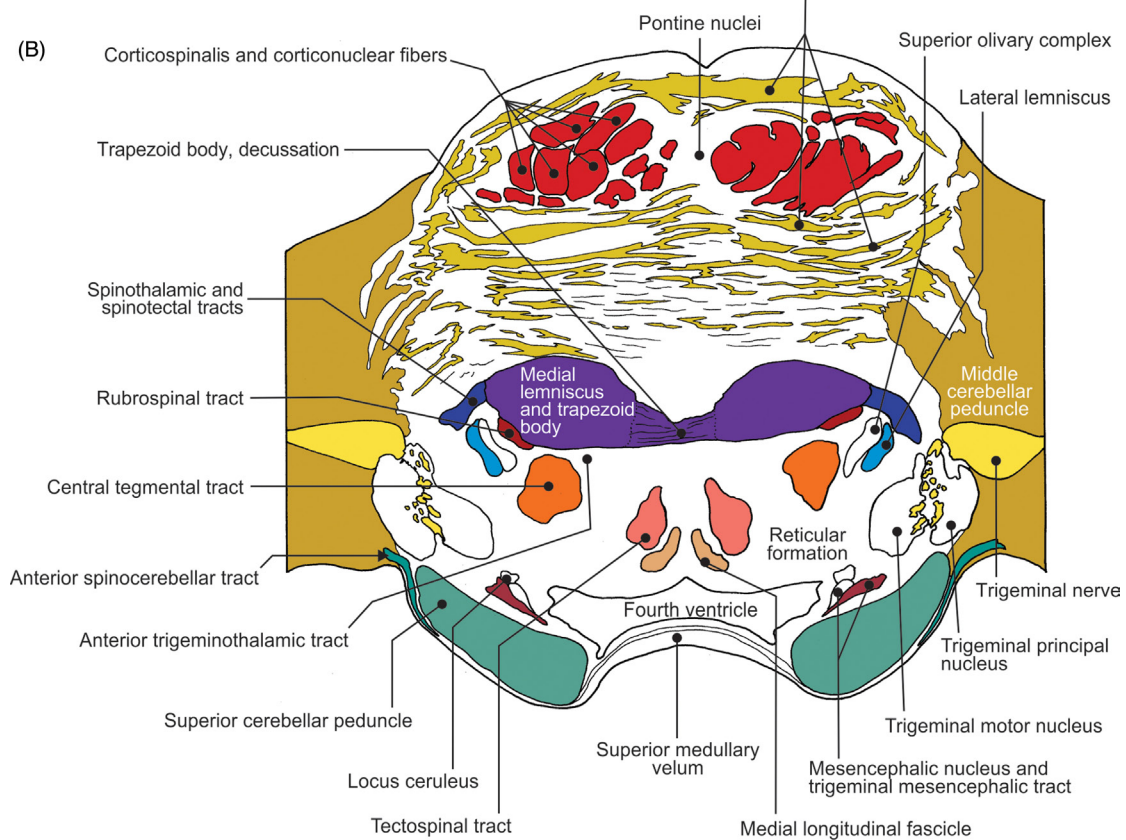
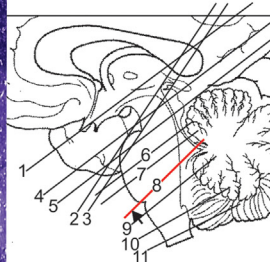


FIGURE 7.39 Transverse section of the middle third of pons. (A) Histology and (B) illustration.

(A)



(B)

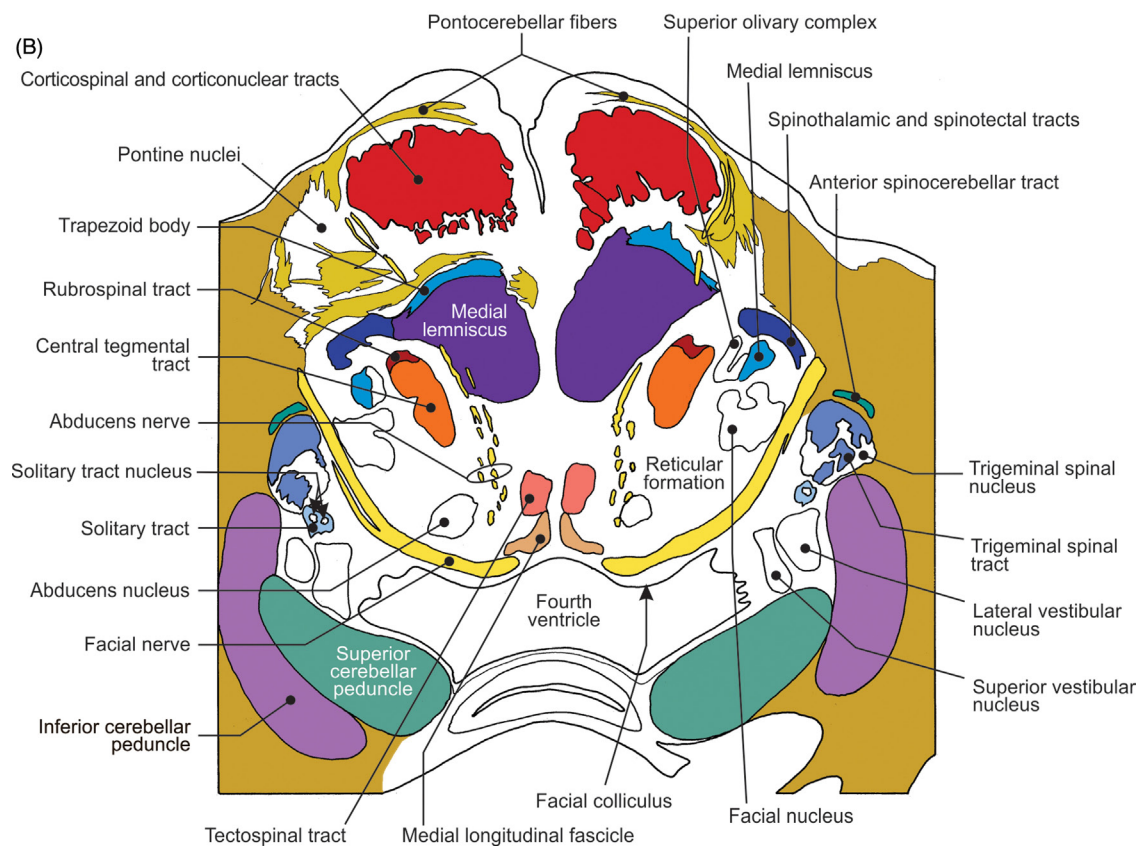


FIGURE 7.40 Transverse section of pons at the level of the facial nerve nucleus. (A) Histology and (B) illustration.

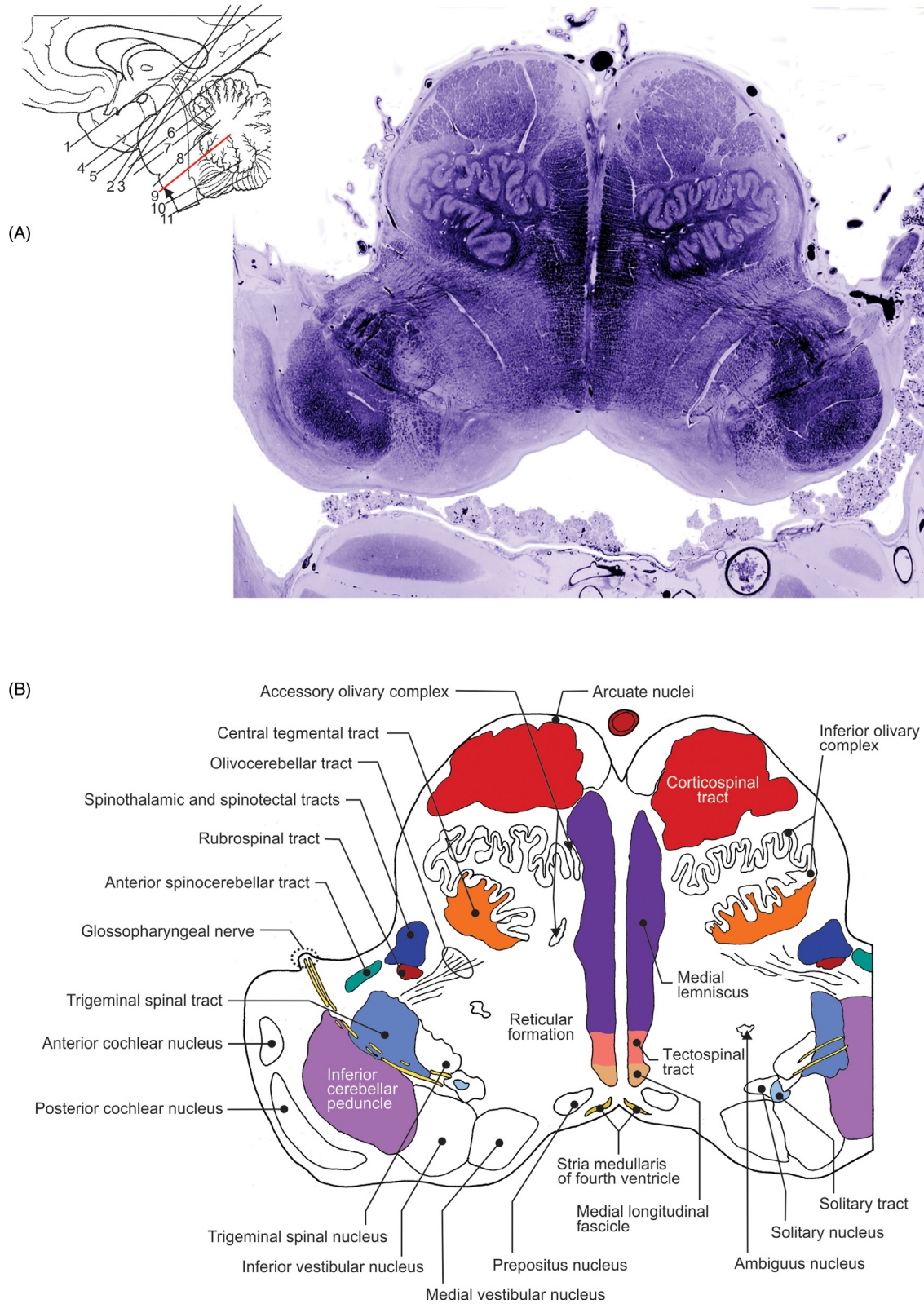


FIGURE 7.41 Transverse section of the uppermost segment of medulla oblongata. (A) Histology and (B) illustration.

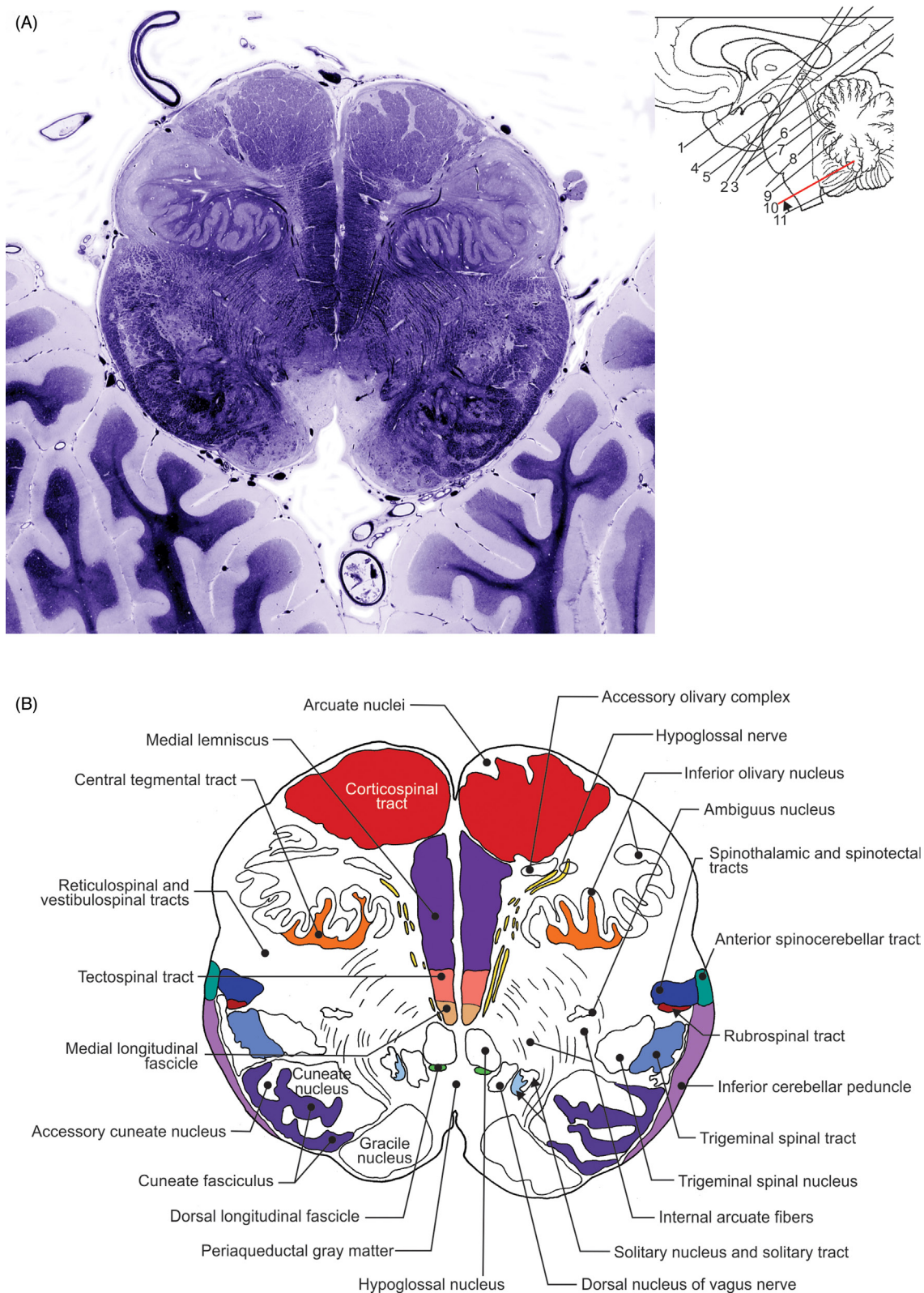


FIGURE 7.42 Transverse section through the middle segment of medulla oblongata. (A) Histology and (B) illustration.

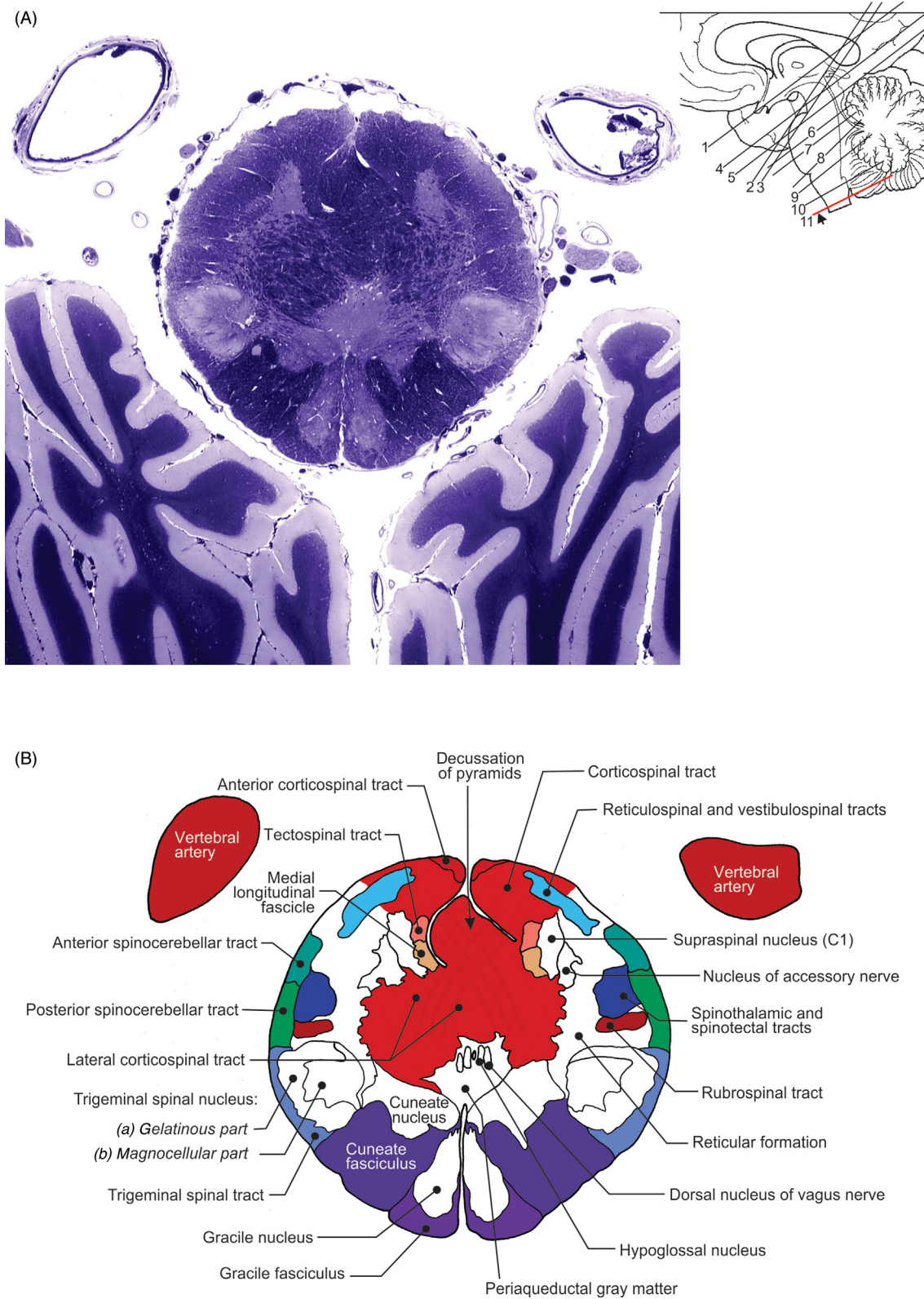


FIGURE 7.43 Transverse section of medulla oblongata through the decussation of pyramids. (A) Histology and (B) illustration.

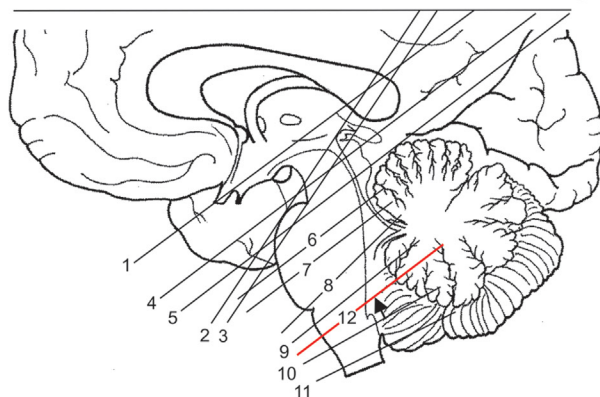
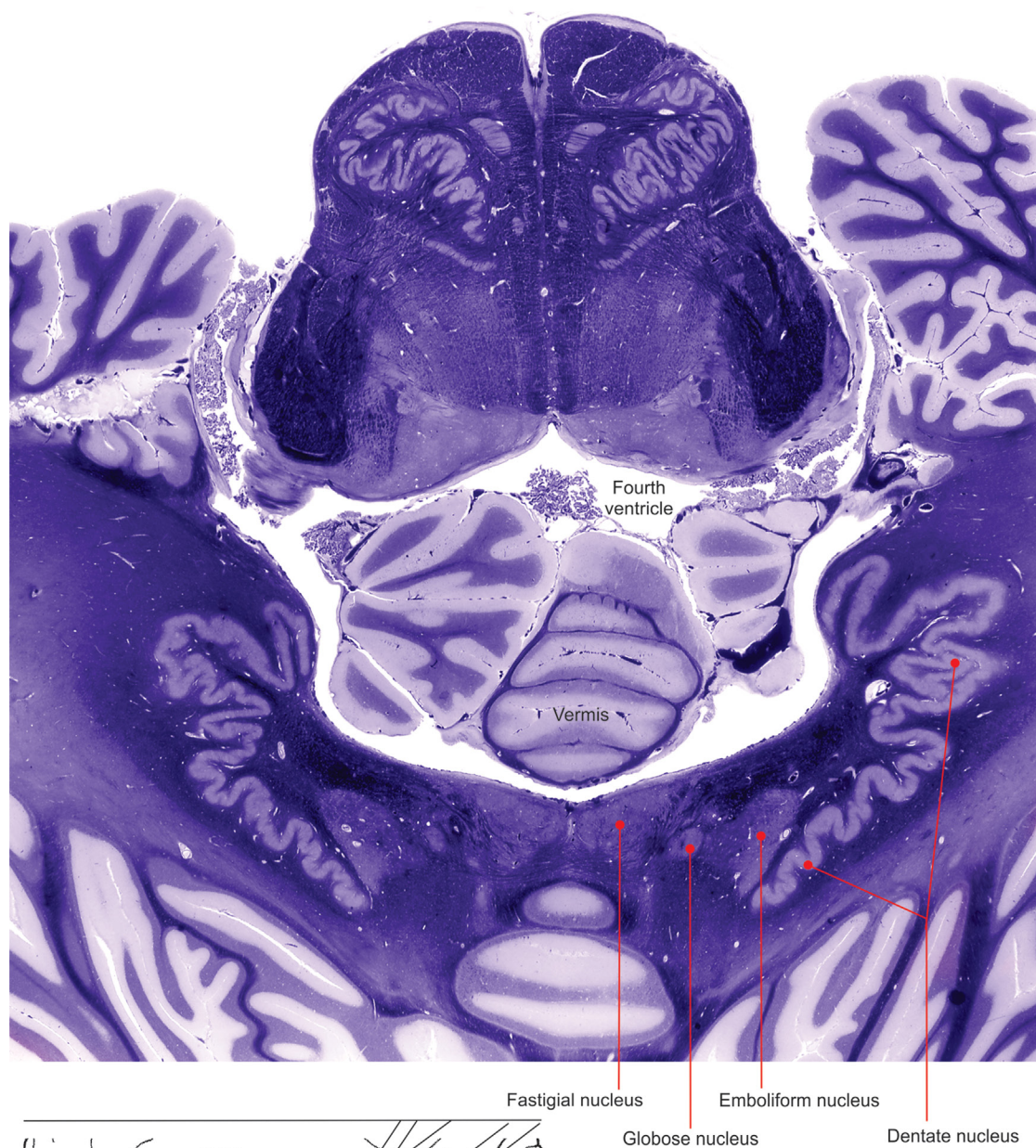


FIGURE 7.44 Transverse section of cerebellar nuclei.

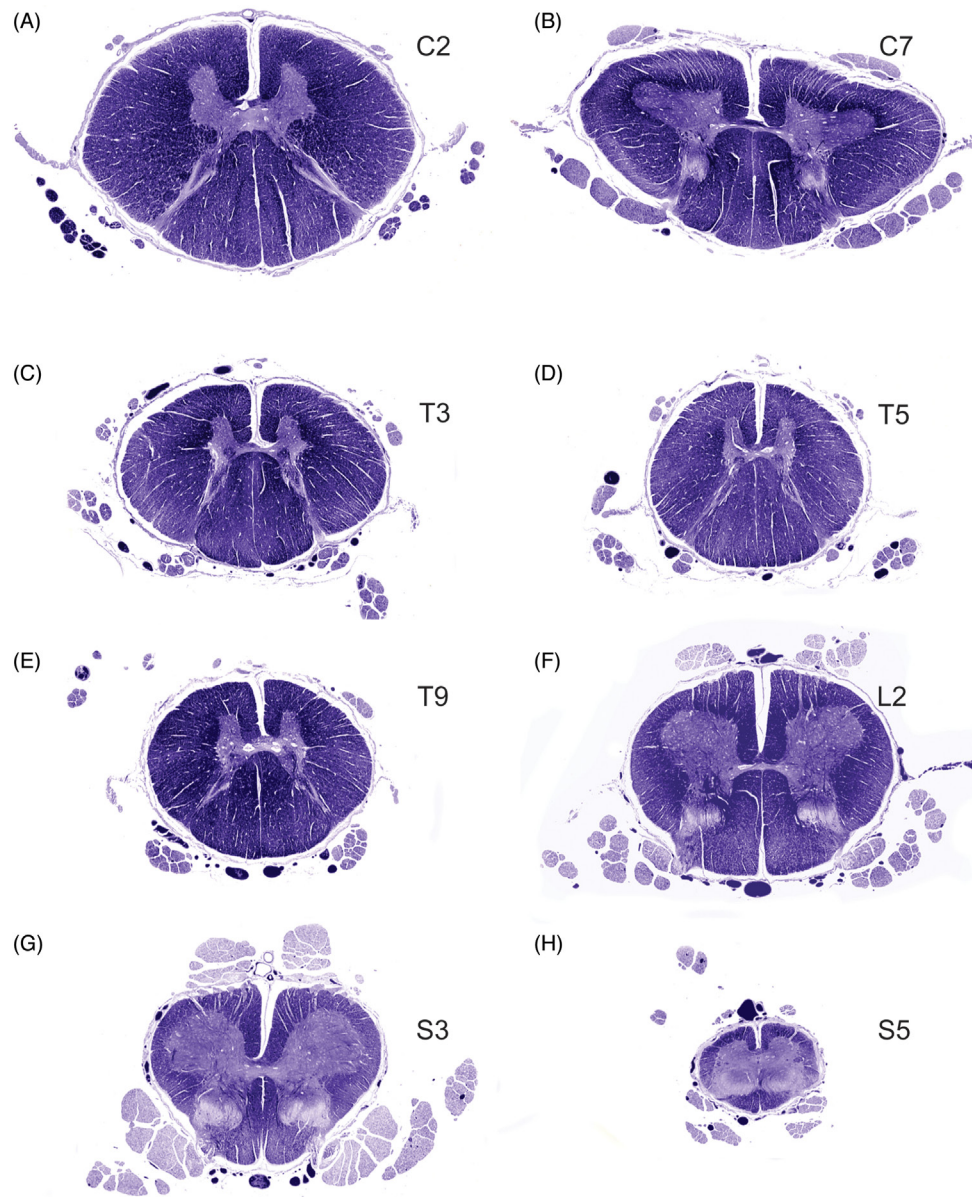
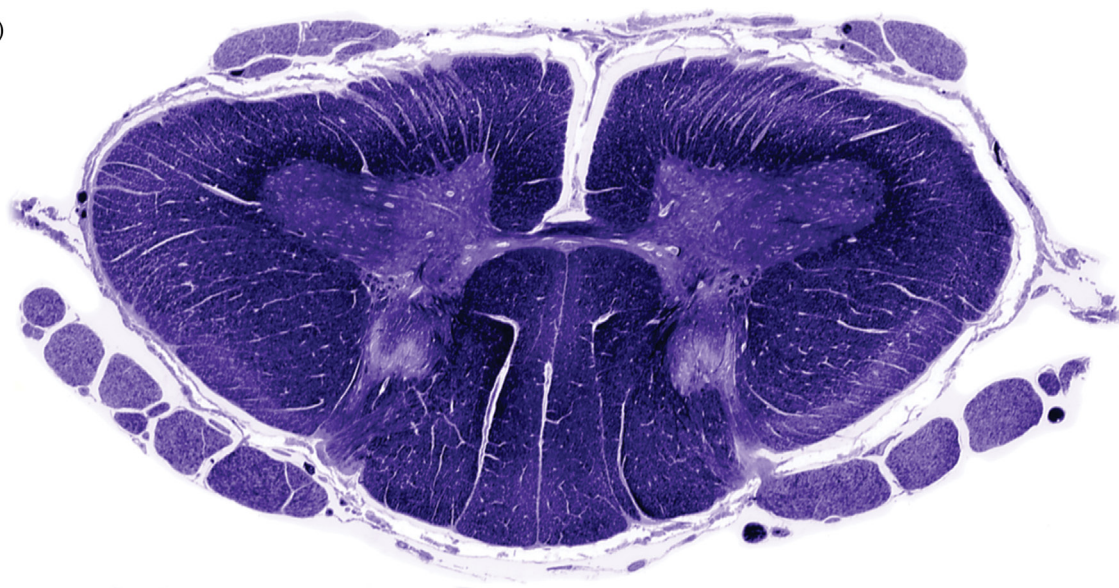


FIGURE 7.45 (A–H) Sequential transverse sections of the spinal cord.

(A)



(B)

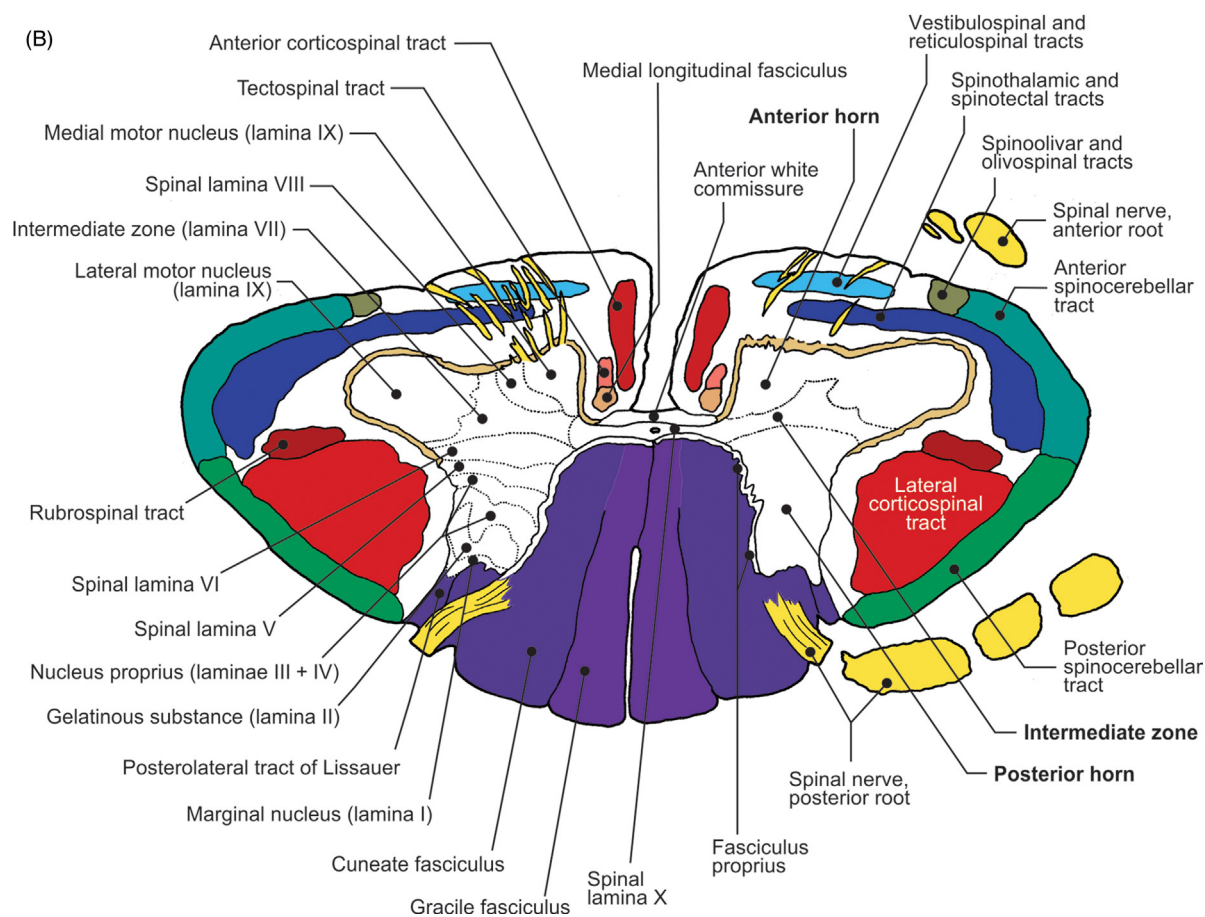


FIGURE 7.46 Transverse section of C7 segment of the spinal cord. (A) Histology and (B) illustration.

(A)



(B)

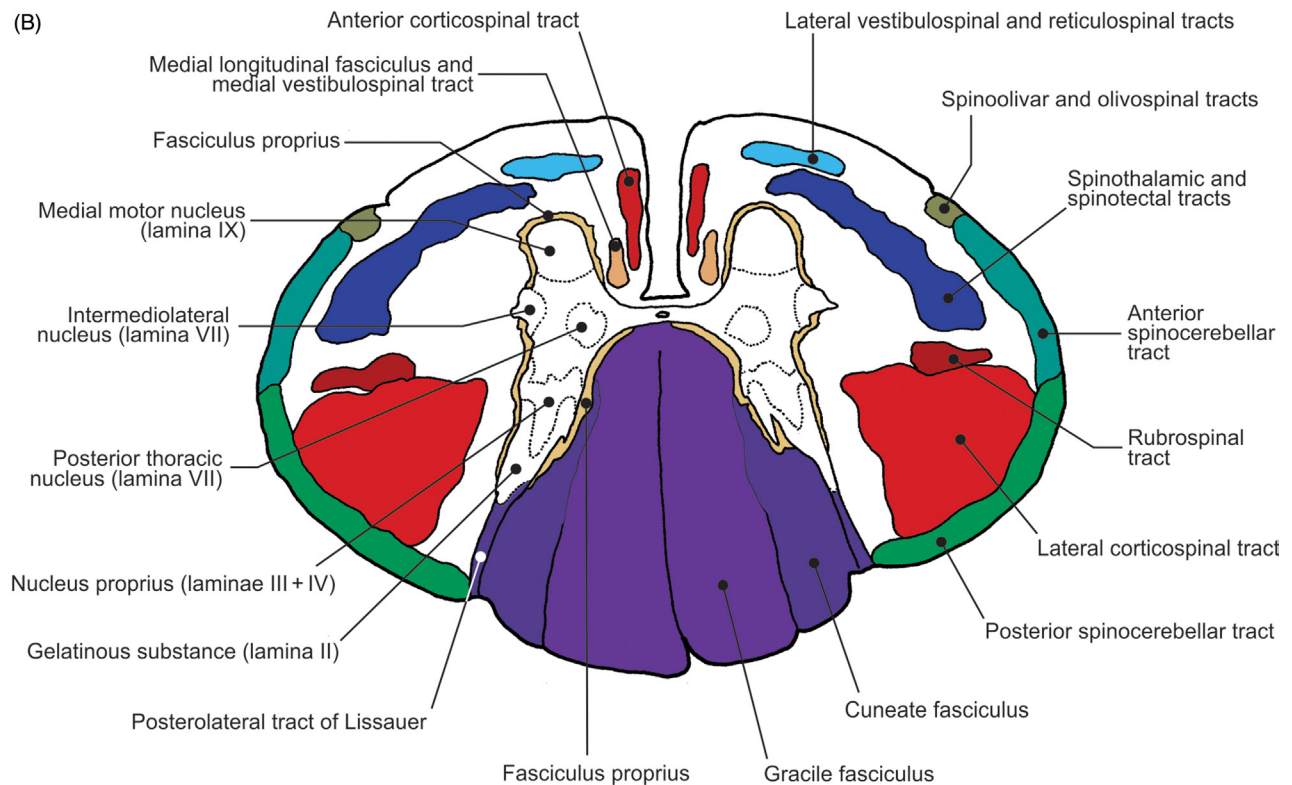
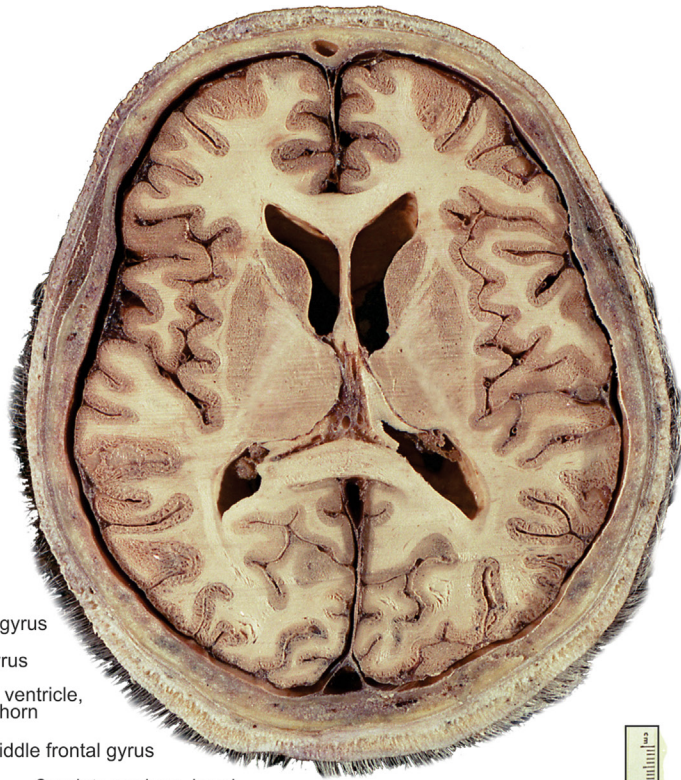
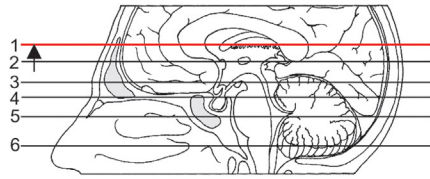


FIGURE 7.47 Transverse section of T3 segment of the spinal cord. (A) Histology and (B) illustration.

(A)



(B)

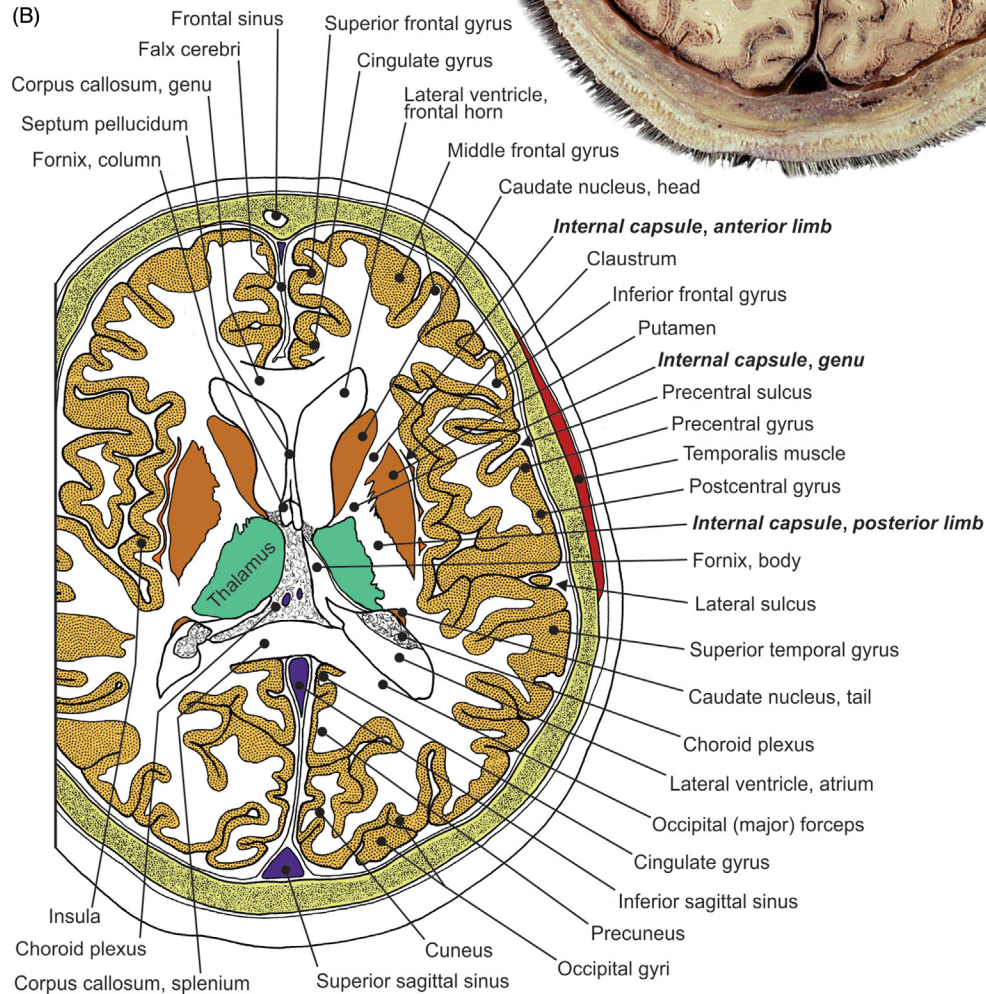
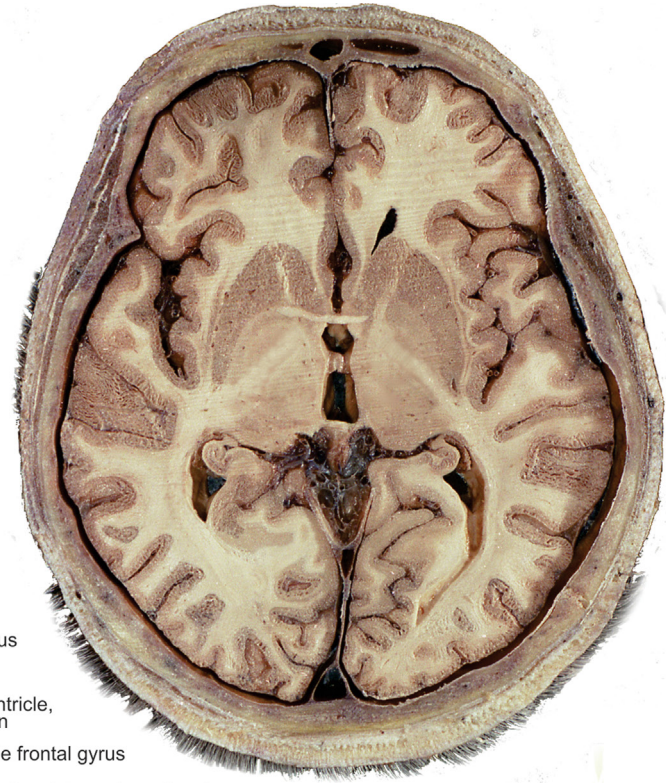
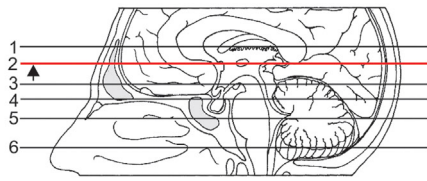
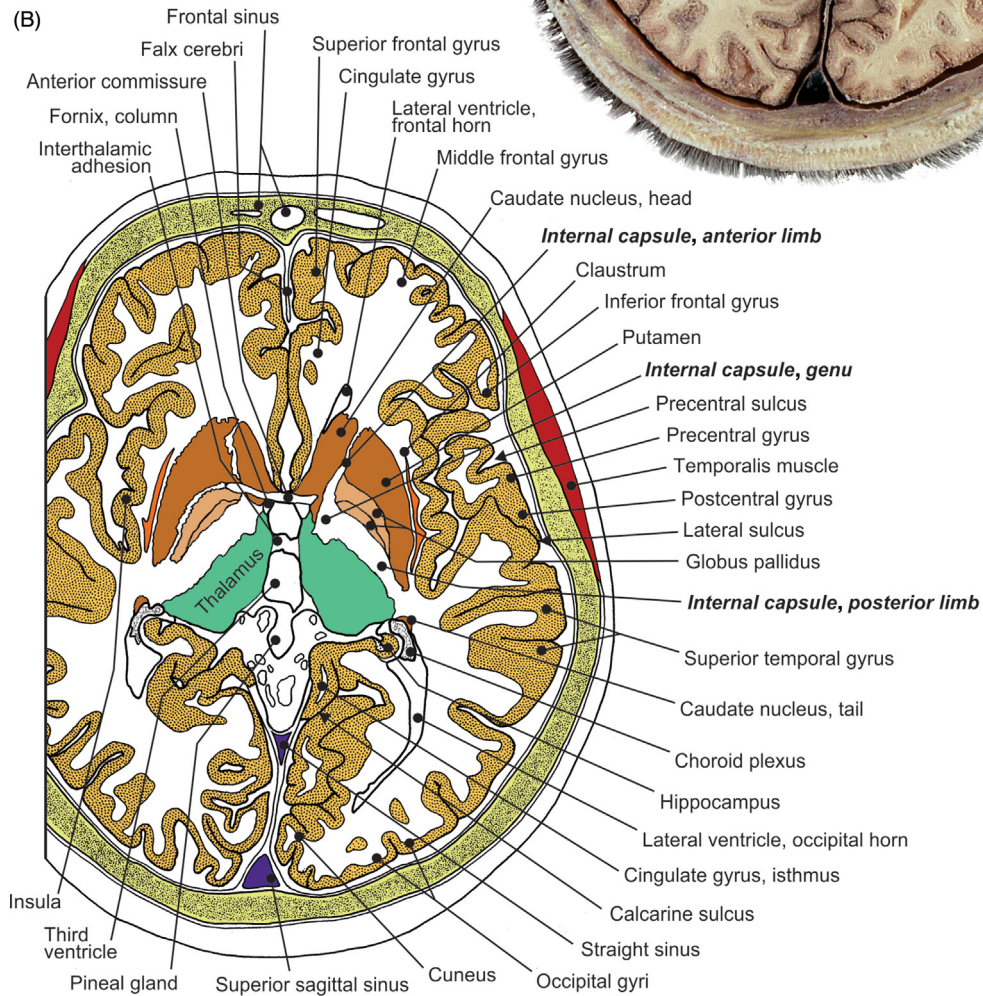


FIGURE 7.48 Transverse section of the genu and splenium of corpus callosum. (A) Section and (B) illustration.

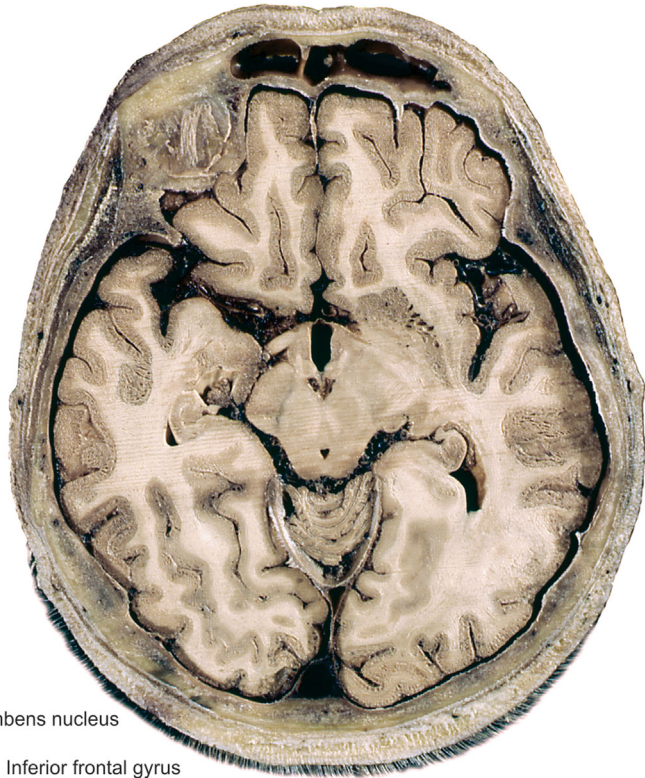
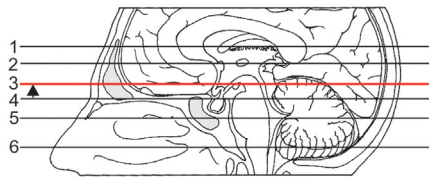
(A)



(B)

**FIGURE 7.49** Transverse section of the pineal gland. (A) Section and (B) illustration.

(A)



(B)

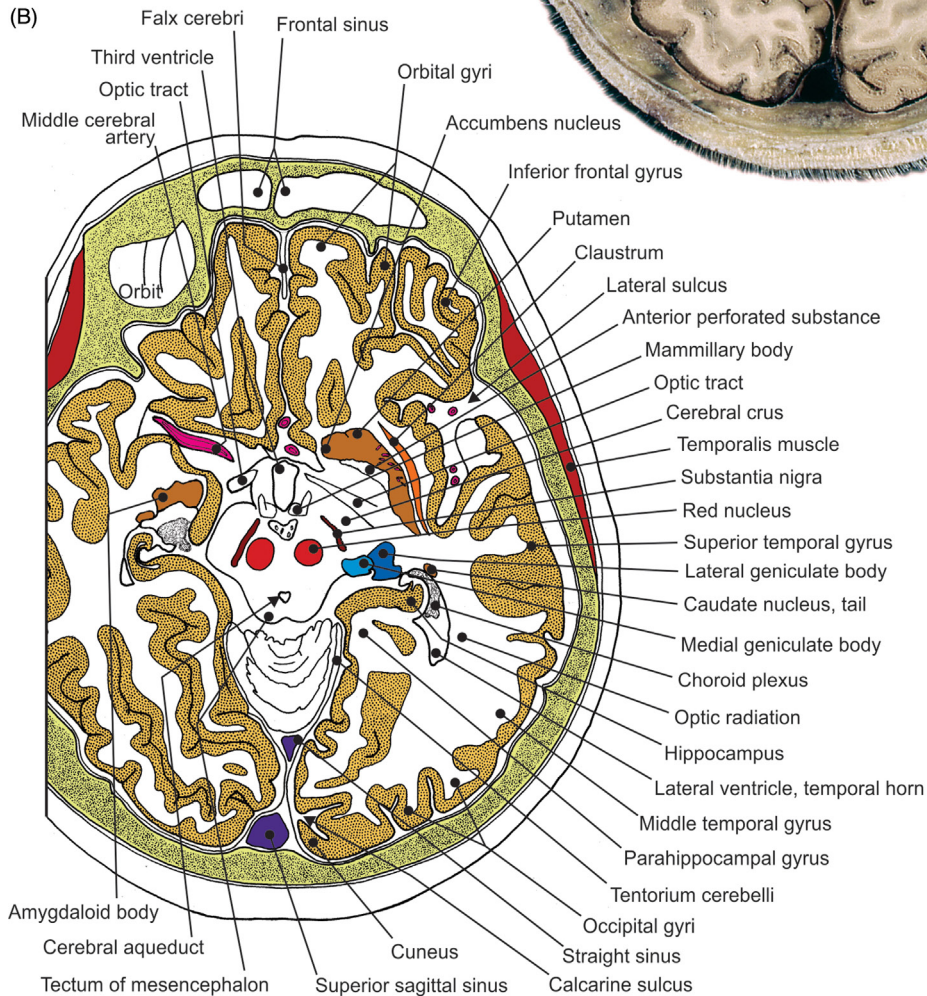


FIGURE 7.50 Transverse section of the mesencephalon. (A) Section and (B) illustration.

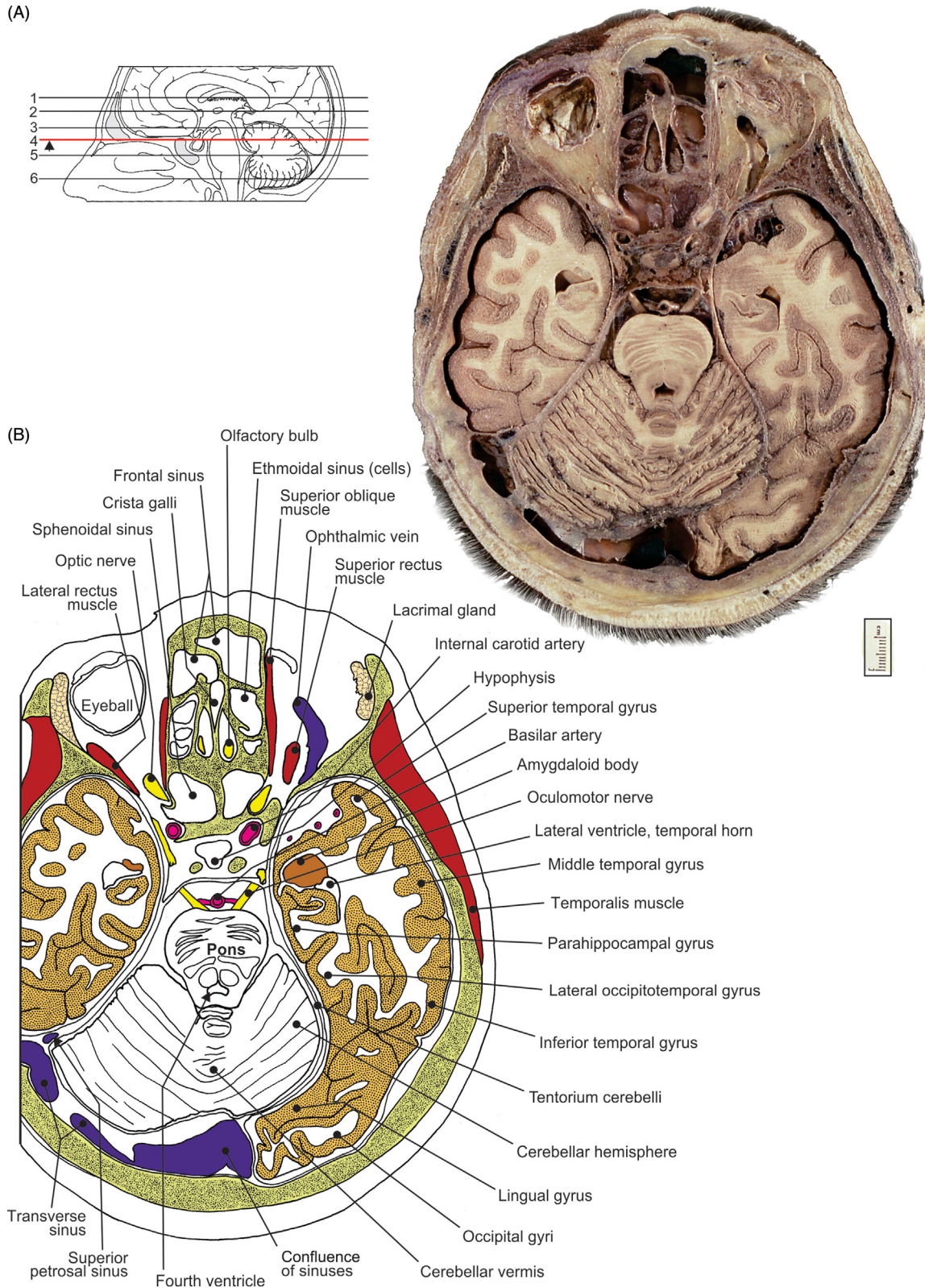
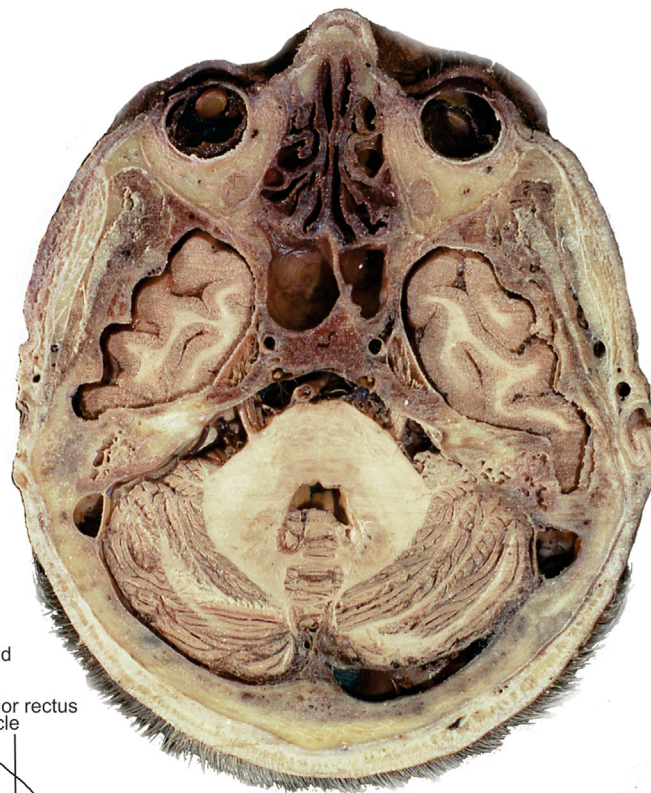
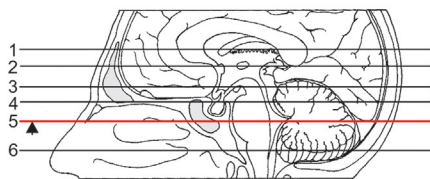


FIGURE 7.51 Transverse section of the uppermost segment of pons. (A) Section and (B) illustration.

(A)



(B)

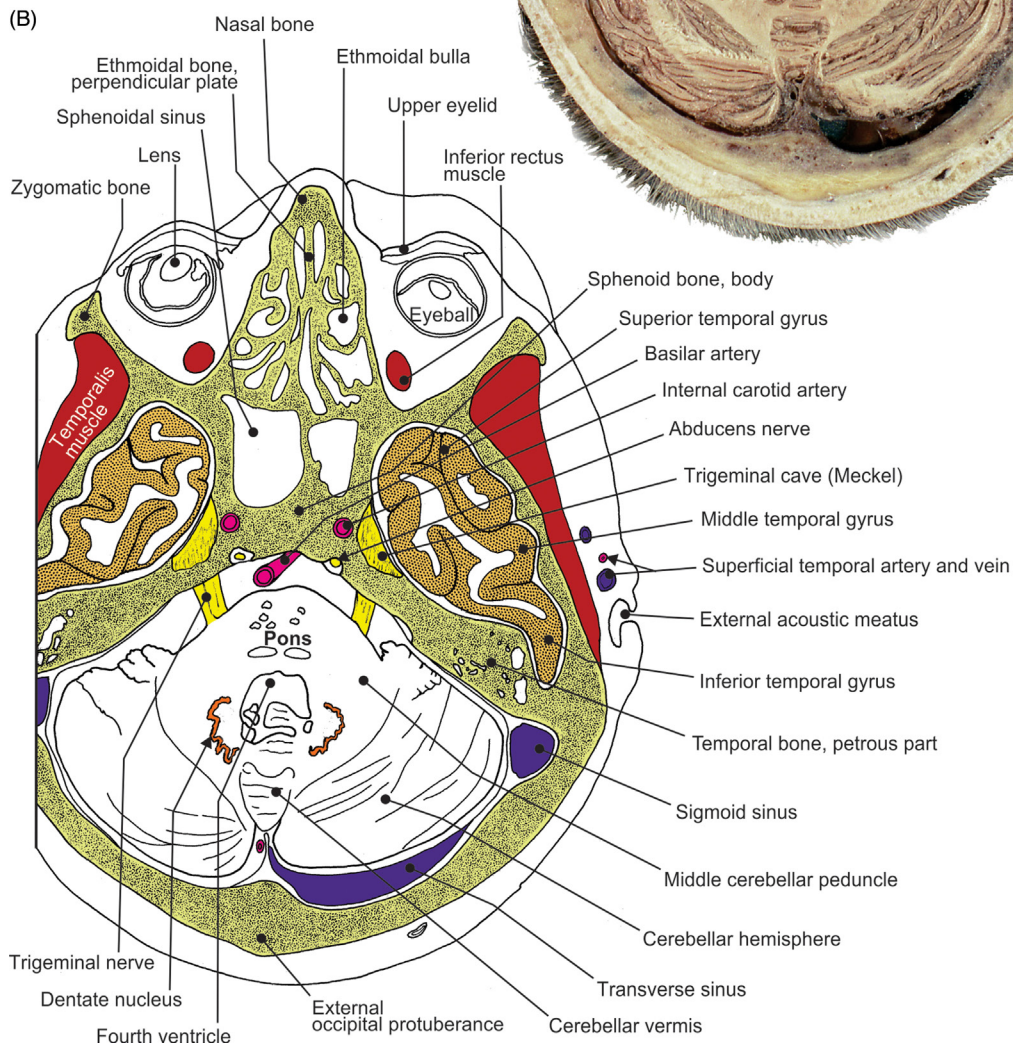


FIGURE 7.52 Transverse section of the lowermost segment of pons. (A) Section and (B) illustration.

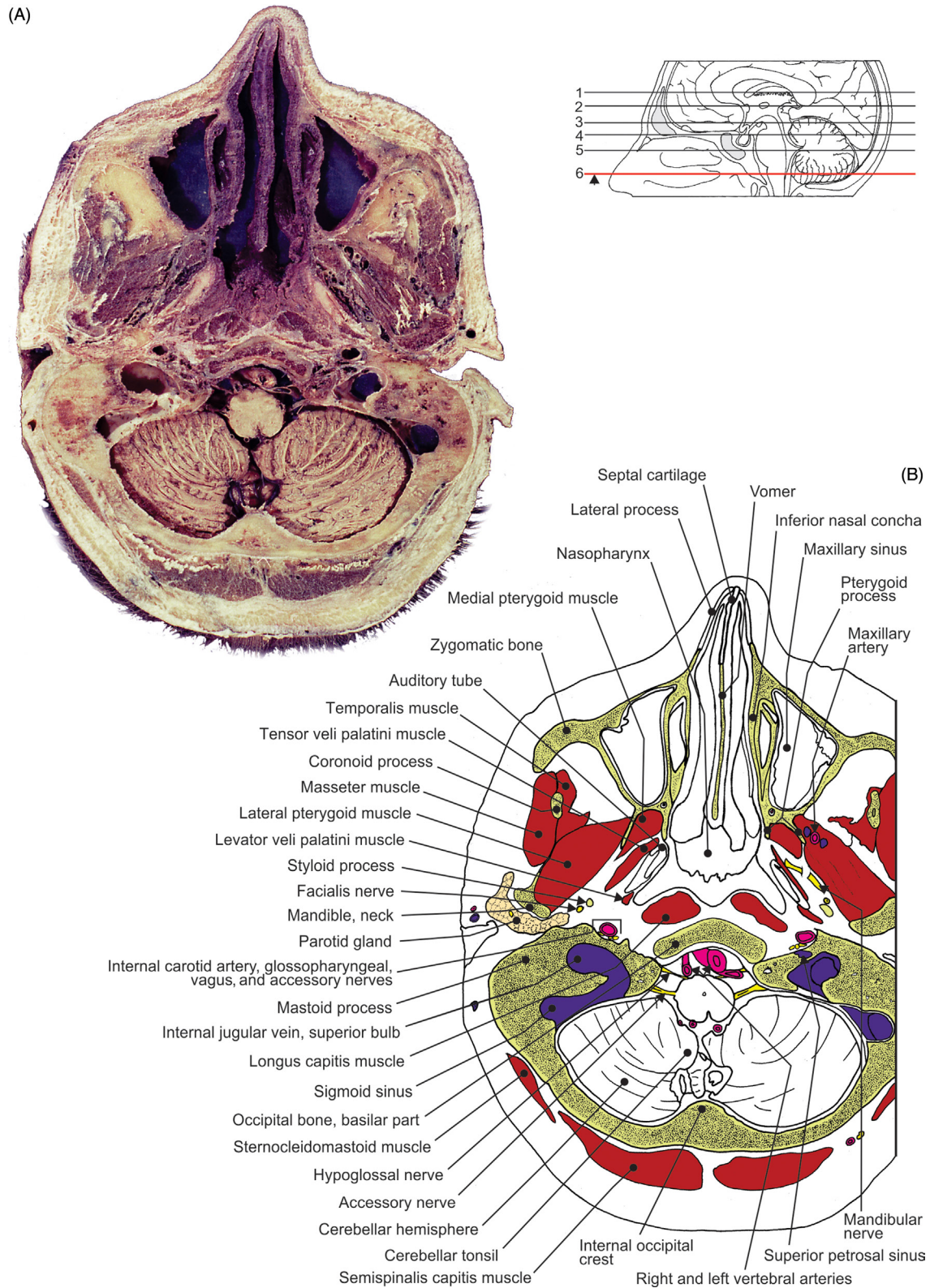
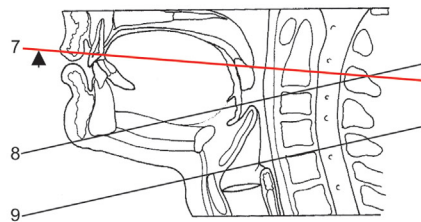


FIGURE 7.53 Transverse section of medulla oblongata. (A) Section and (B) illustration.

(A)



(B)

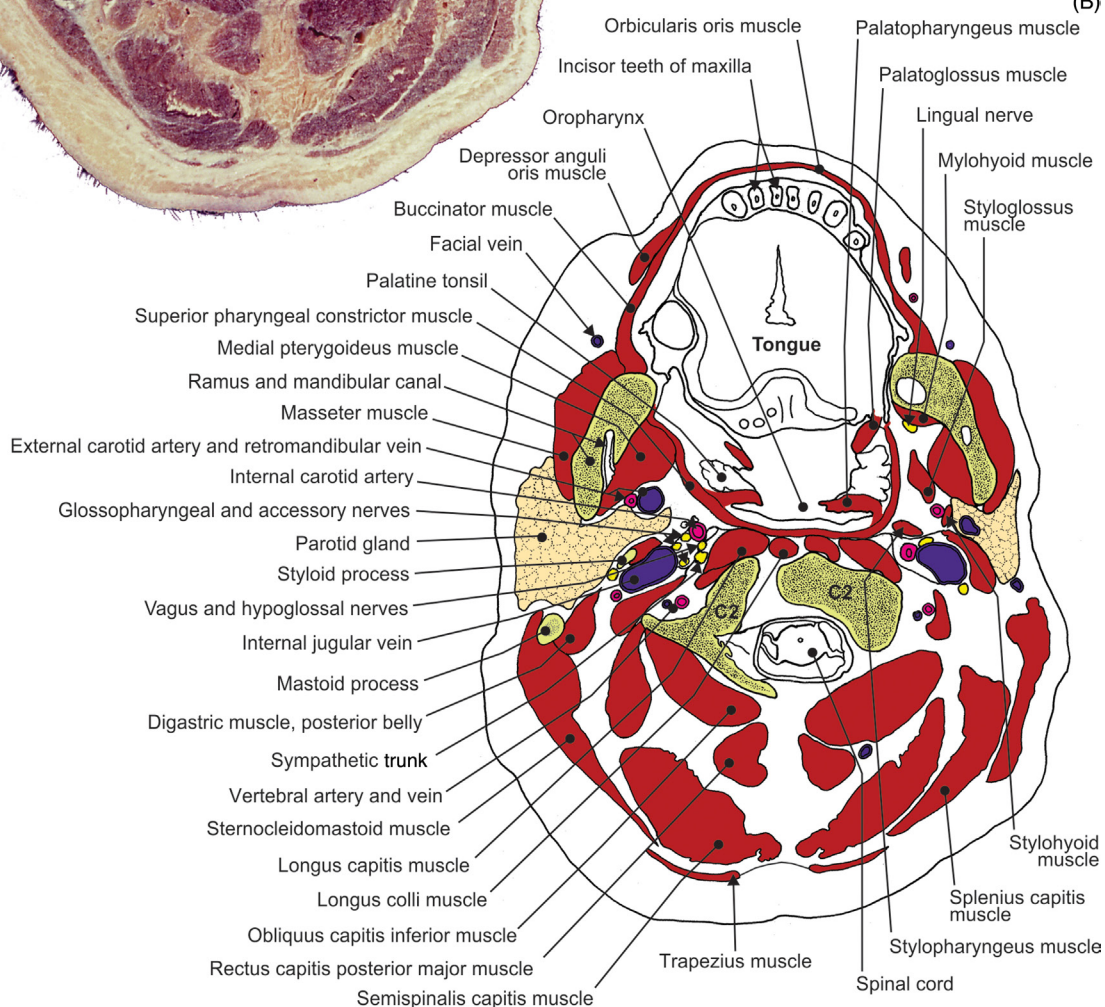


FIGURE 7.54 Transverse section of the oral cavity at the level of C2 vertebra. (A) Section and (B) illustration.

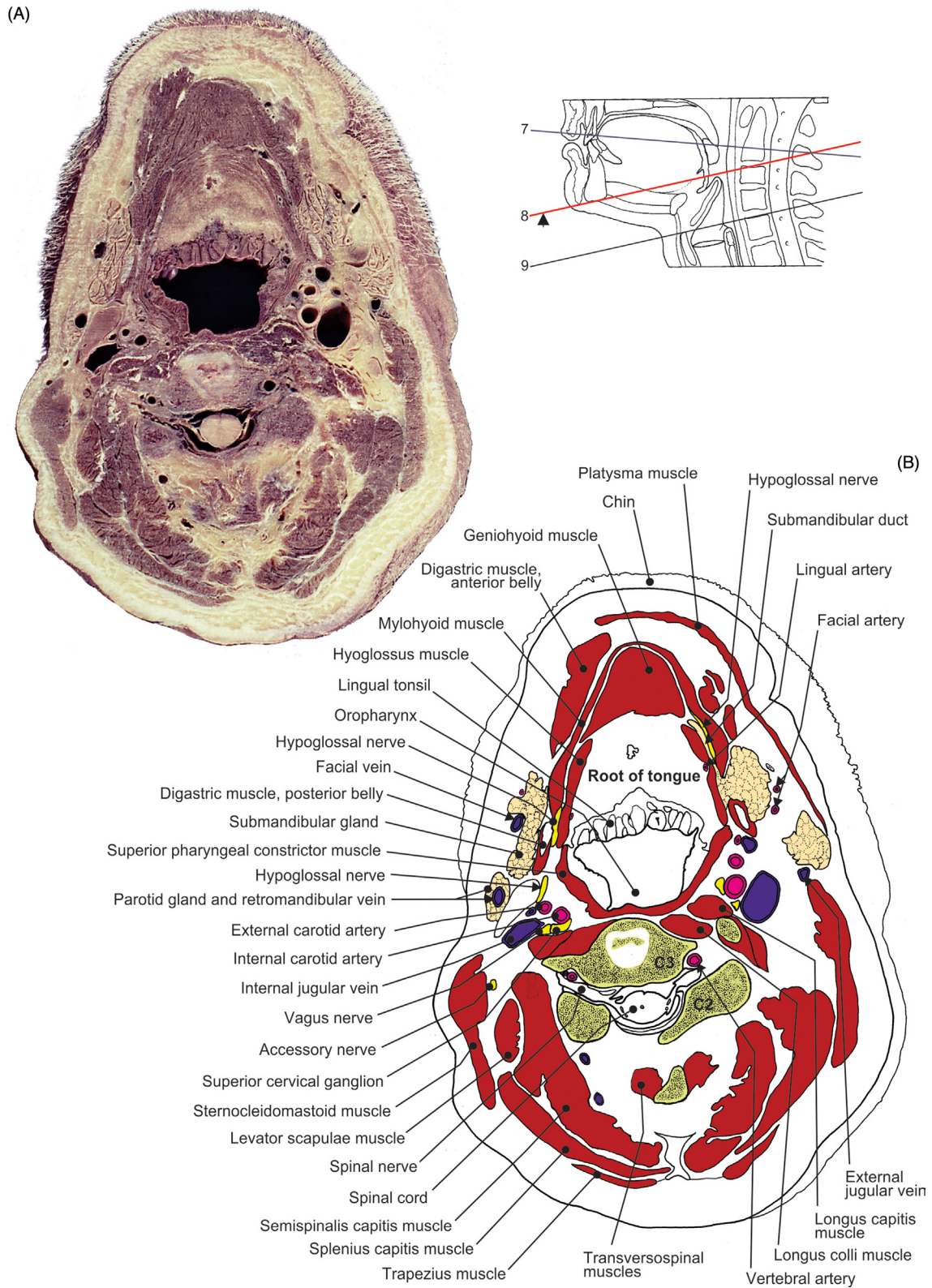


FIGURE 7.55 Transverse section of the neck at the level of C3 vertebra. (A) Section and (B) illustration.

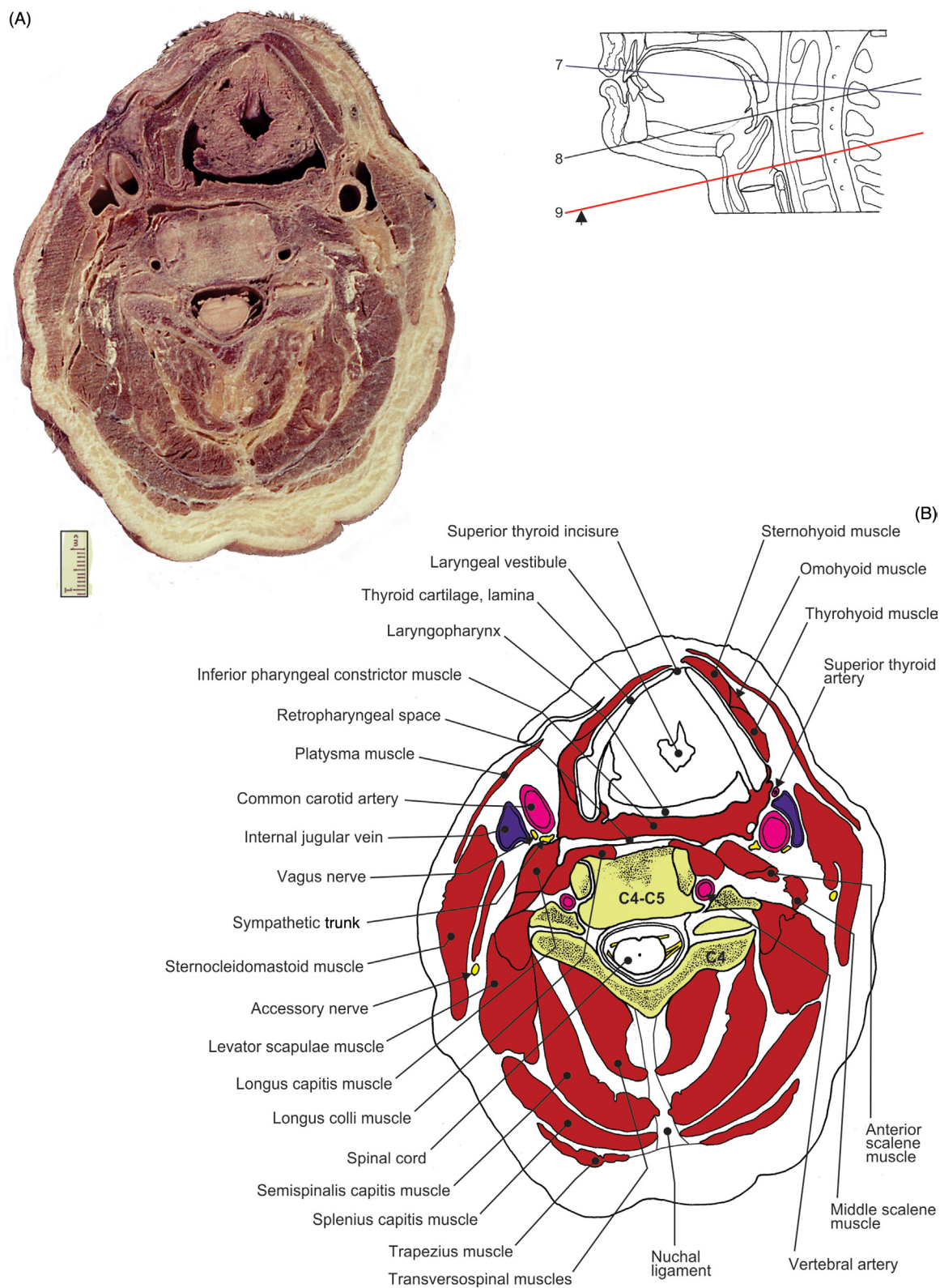


FIGURE 7.56 Transverse section of the neck at the level of C4–C5 vertebrae. (A) Section and (B) illustration.

Chapter 8

Vascularization of Head and Neck and the Cranial Central Nervous System

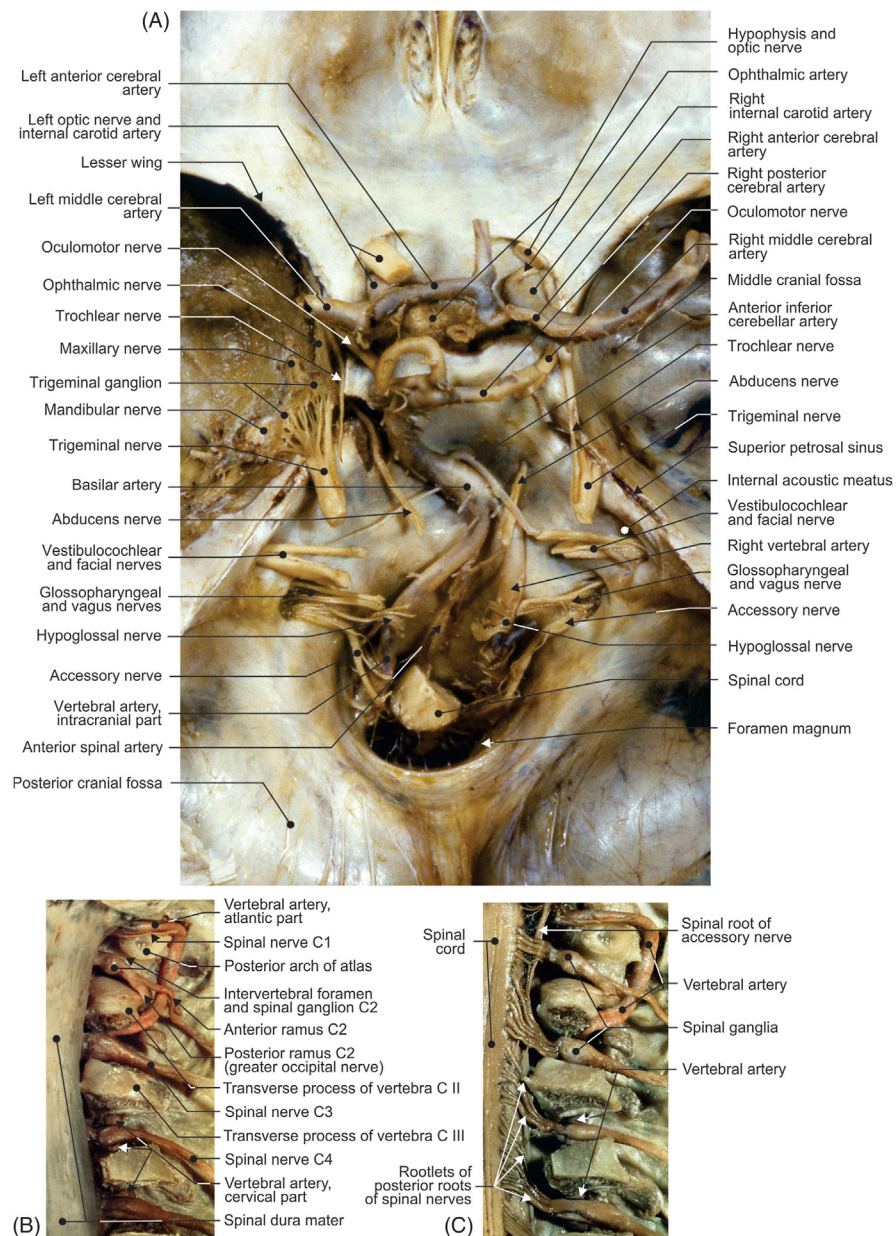


FIGURE 8.1 (A) Cranial base with cranial nerves and arteries. Posterior views of vertebral artery and spinal cord: (B) view with vertebral segments removed and (C) view with dura mater removed.

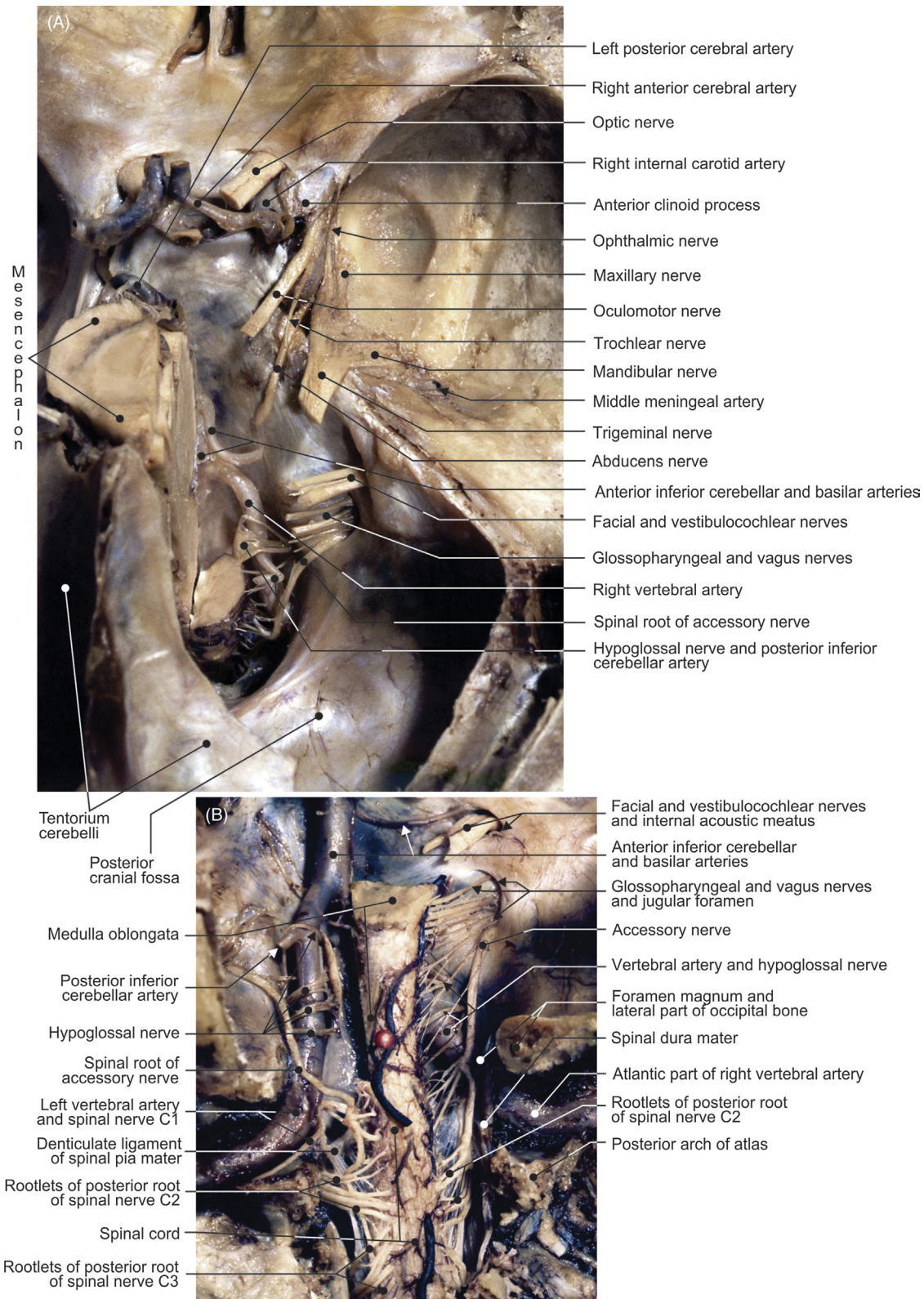


FIGURE 8.2 (A) Right half of the cranial base: cranial nerves and arteries. (B) Posterior view of the terminal segment of the vertebral artery: dissection.

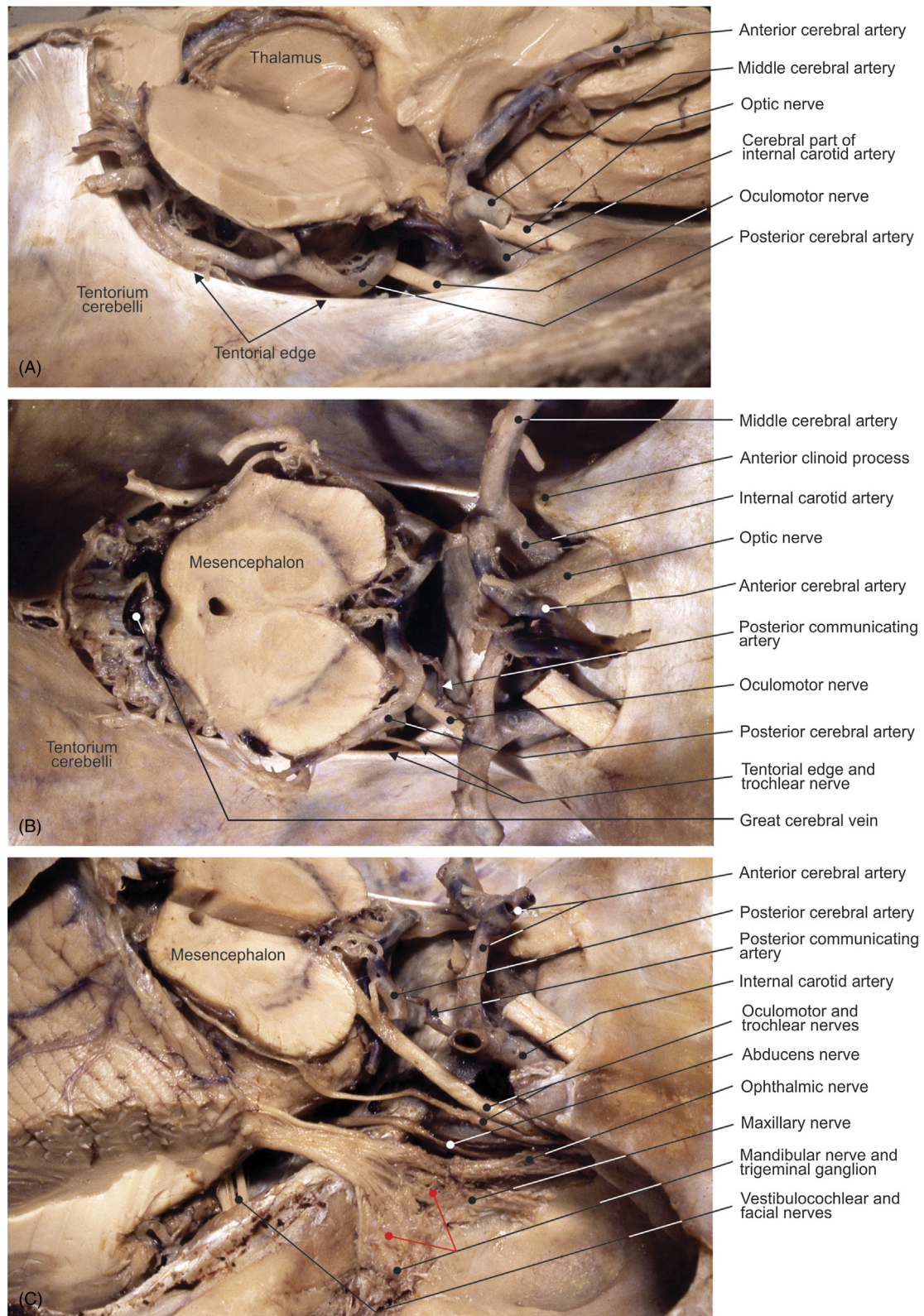


FIGURE 8.3 (A) Right and (B) both hemispheres removed, view from the right side. (C) Relationships of structures on the cranial base.

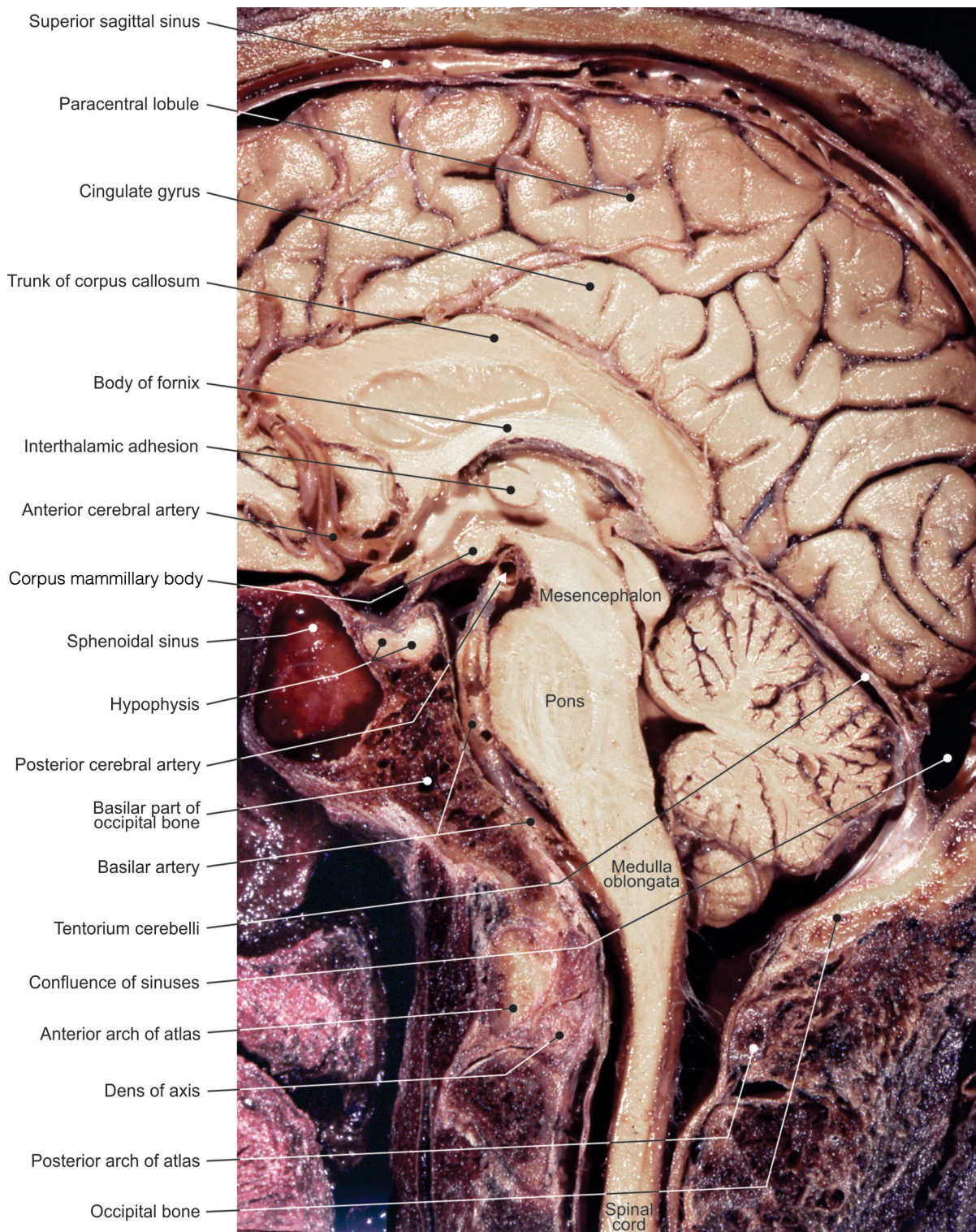


FIGURE 8.4 The midsagittal section of the head. Internal aspect of the right hemisphere.

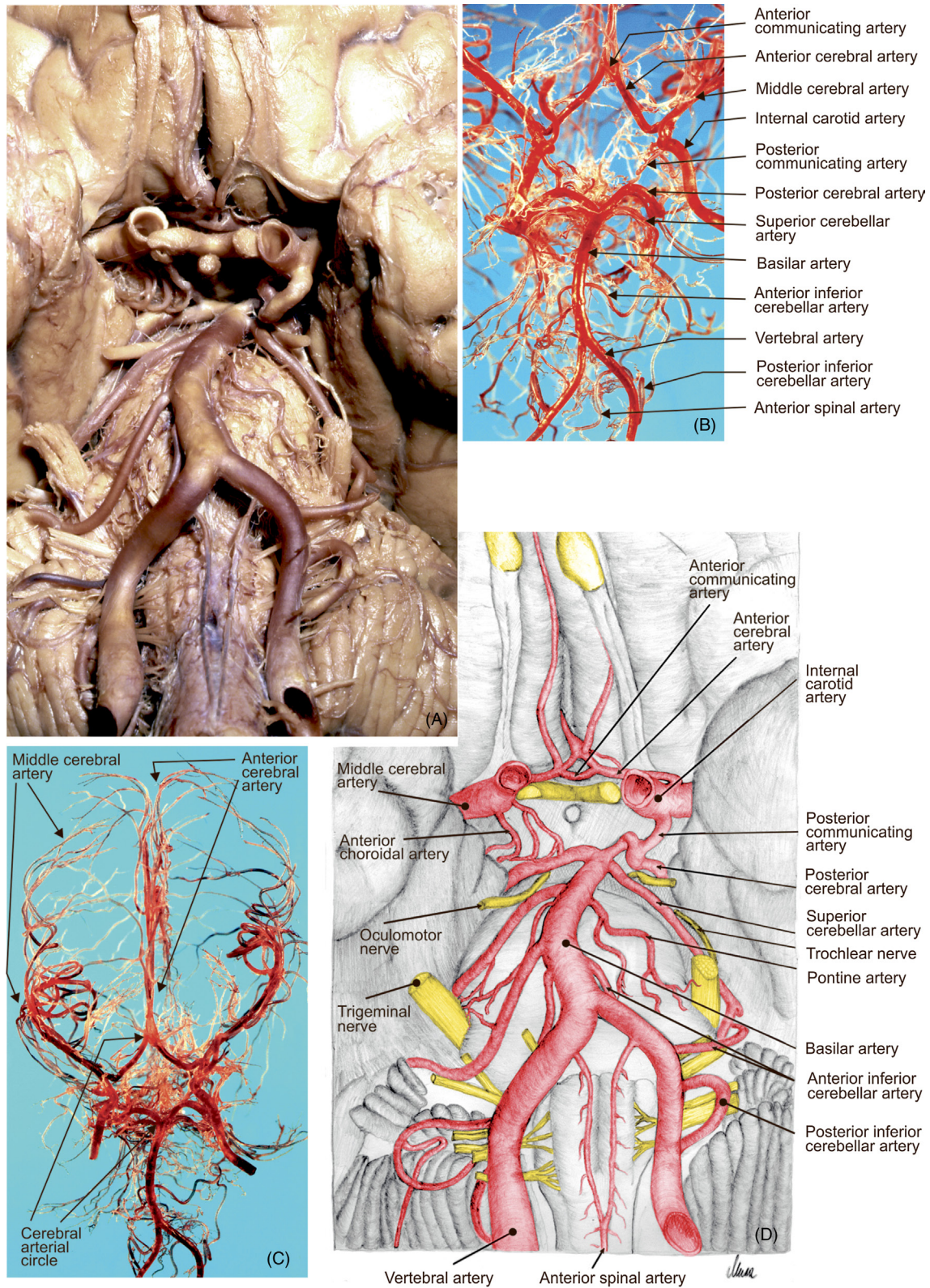


FIGURE 8.5 Arterial distribution on the base of the cranial central nervous system. (A) Formalin preparation, (B–C) corrosion casts, and (D) illustration.

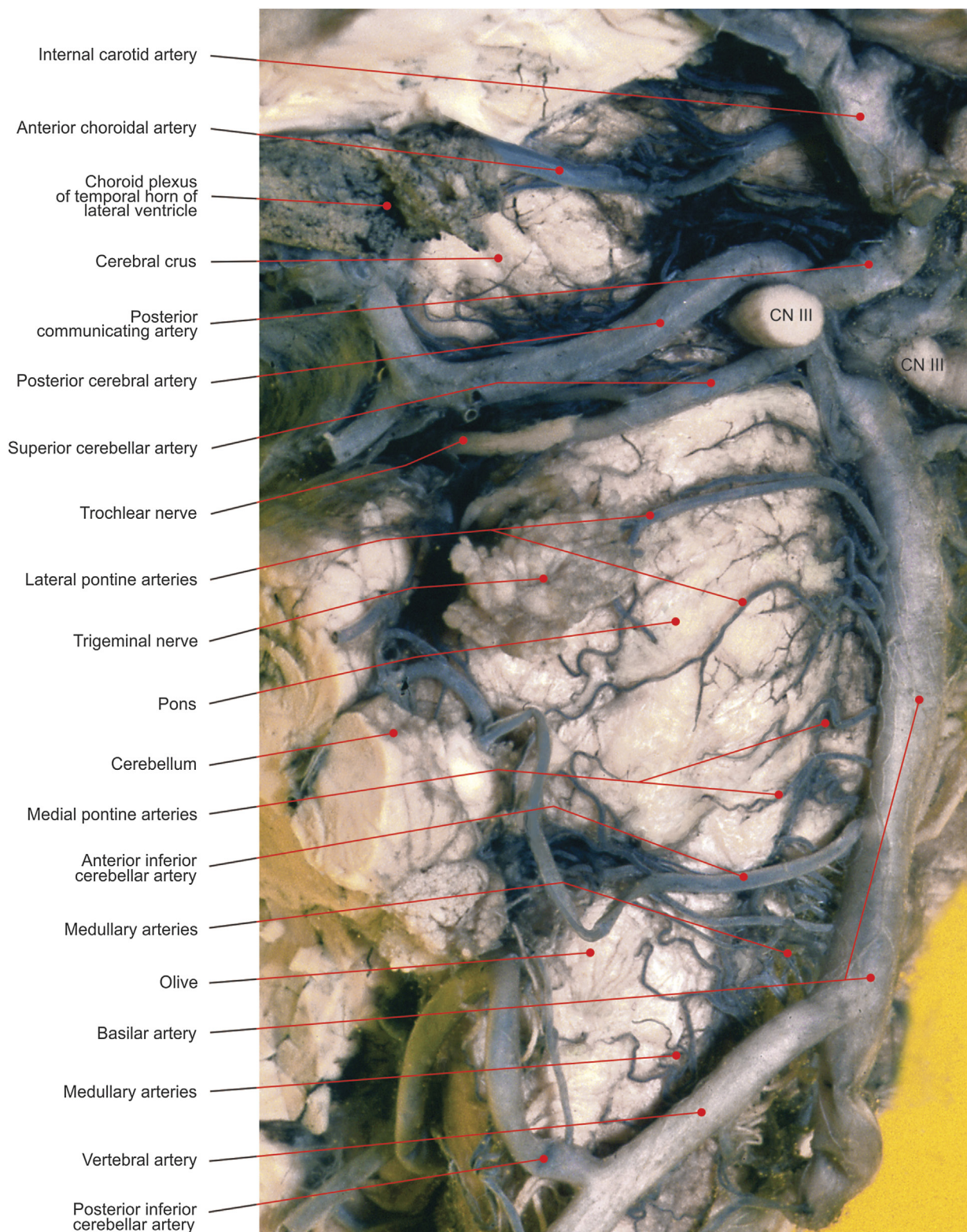


FIGURE 8.6 Arteries on the anterolateral side of the brainstem (India ink–gelatin).

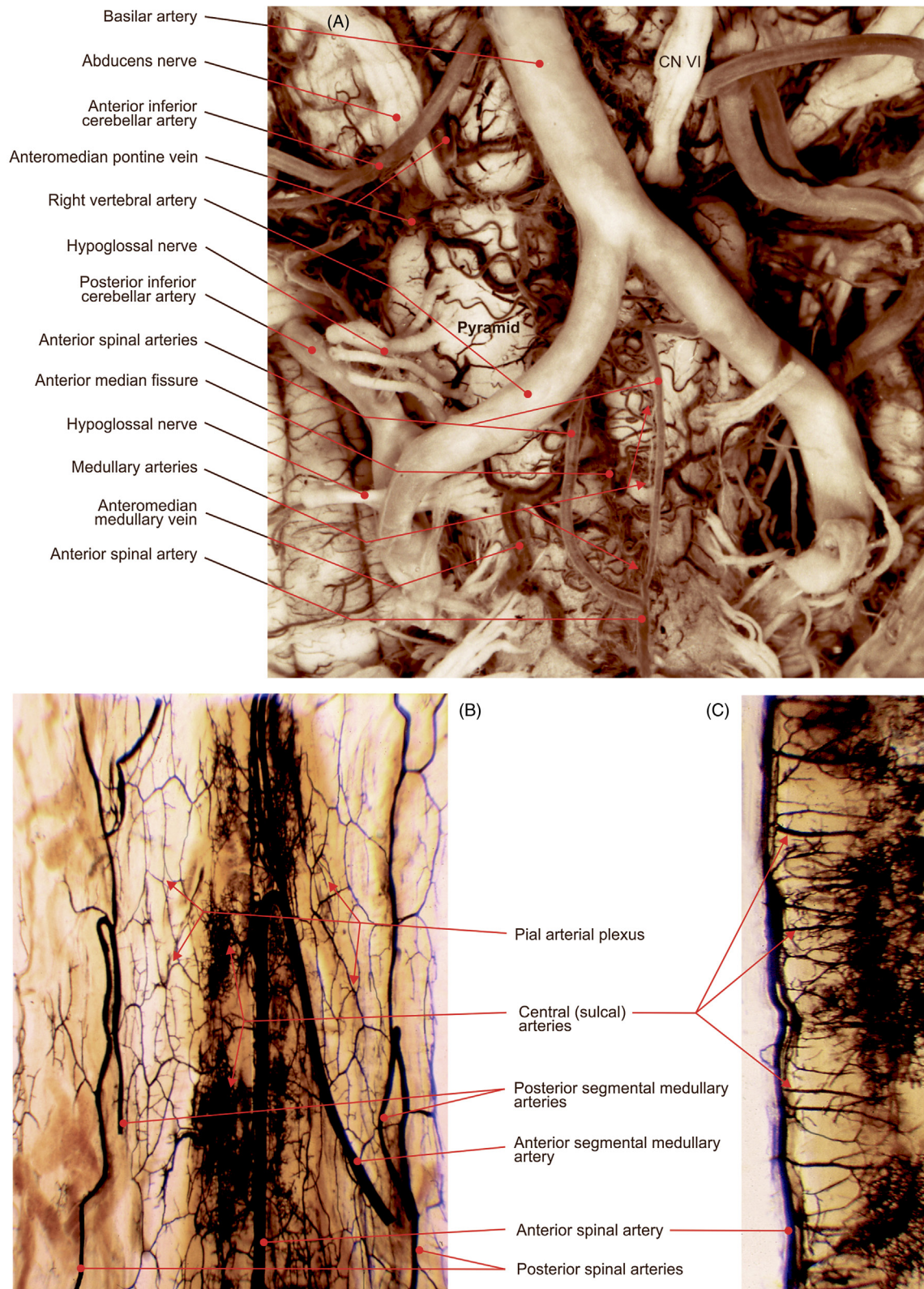


FIGURE 8.7 (A) Arteries, prepared with India ink–gelatin, on the anterior surface of the medulla. (B–C) Cleared specimens of arteries, injected with India ink–gelatin, in relation to the (B) thoracic segment of the spinal cord, and (C) midsagittal section of the spinal cord.

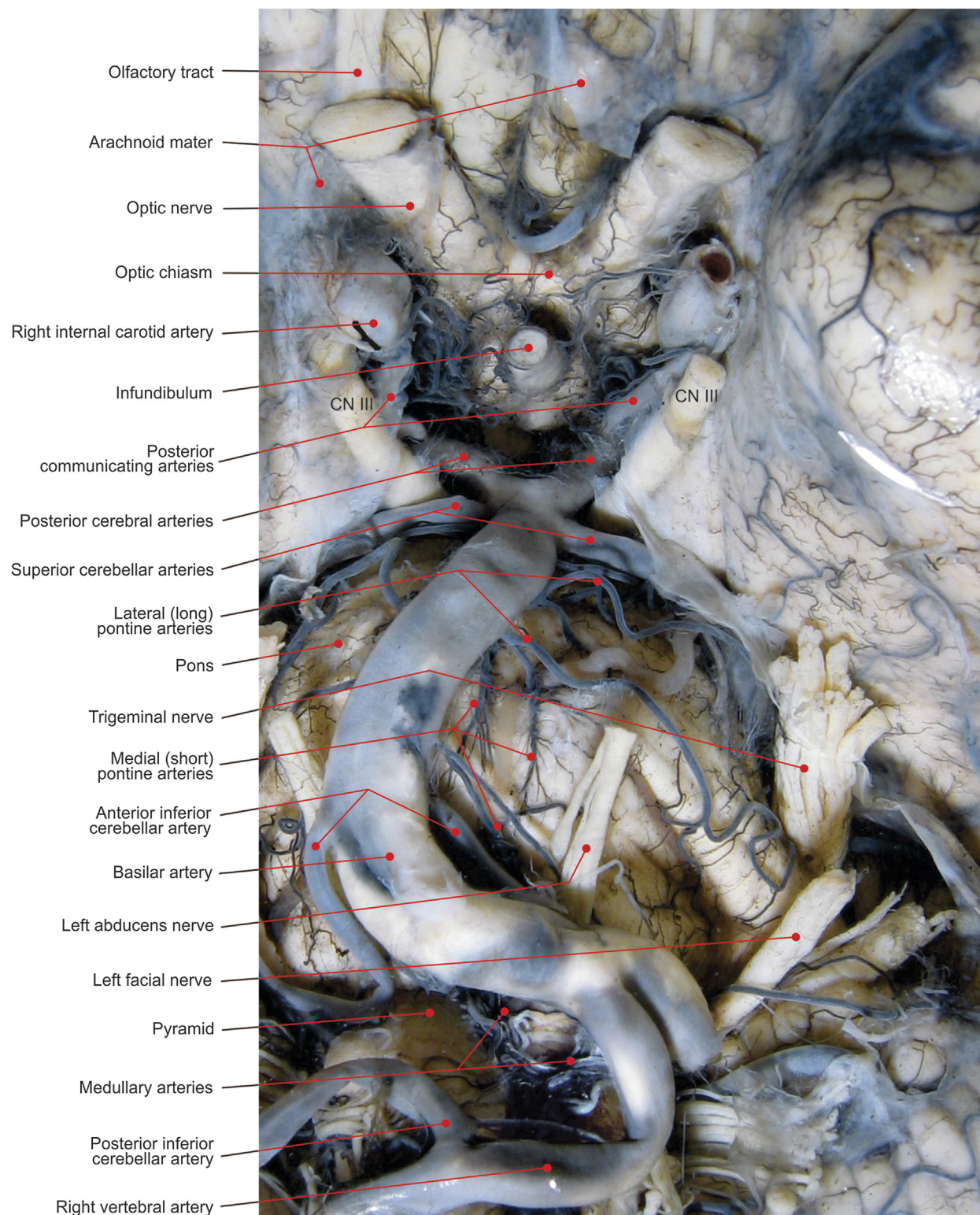


FIGURE 8.8 Arteries on the anterolateral side of the brainstem (India ink–gelatin).

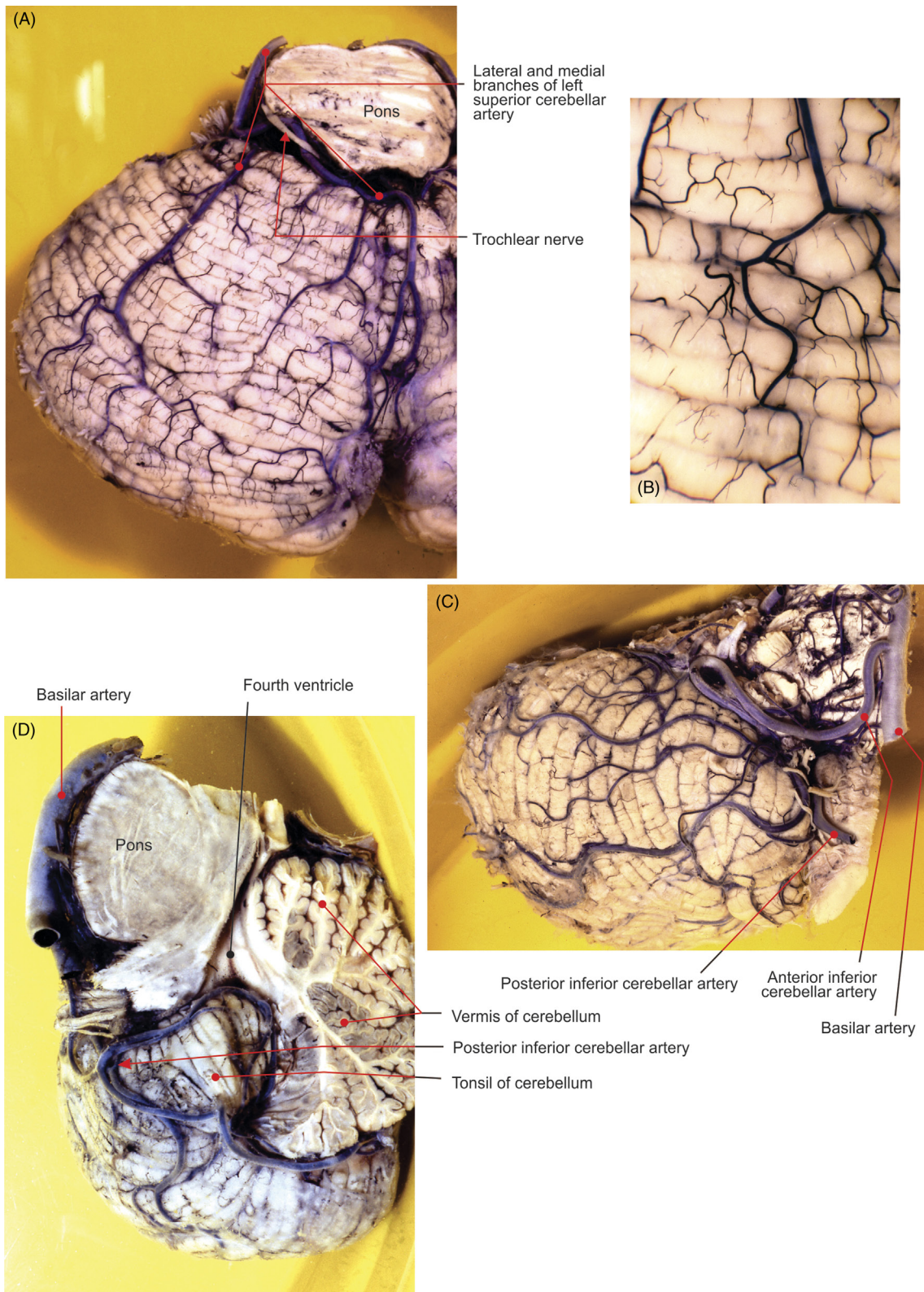


FIGURE 8.9 The cerebellum. (A) Vascularization of the superior aspect; (B) detail. (C) The anterior segment and (D) inferior aspect.

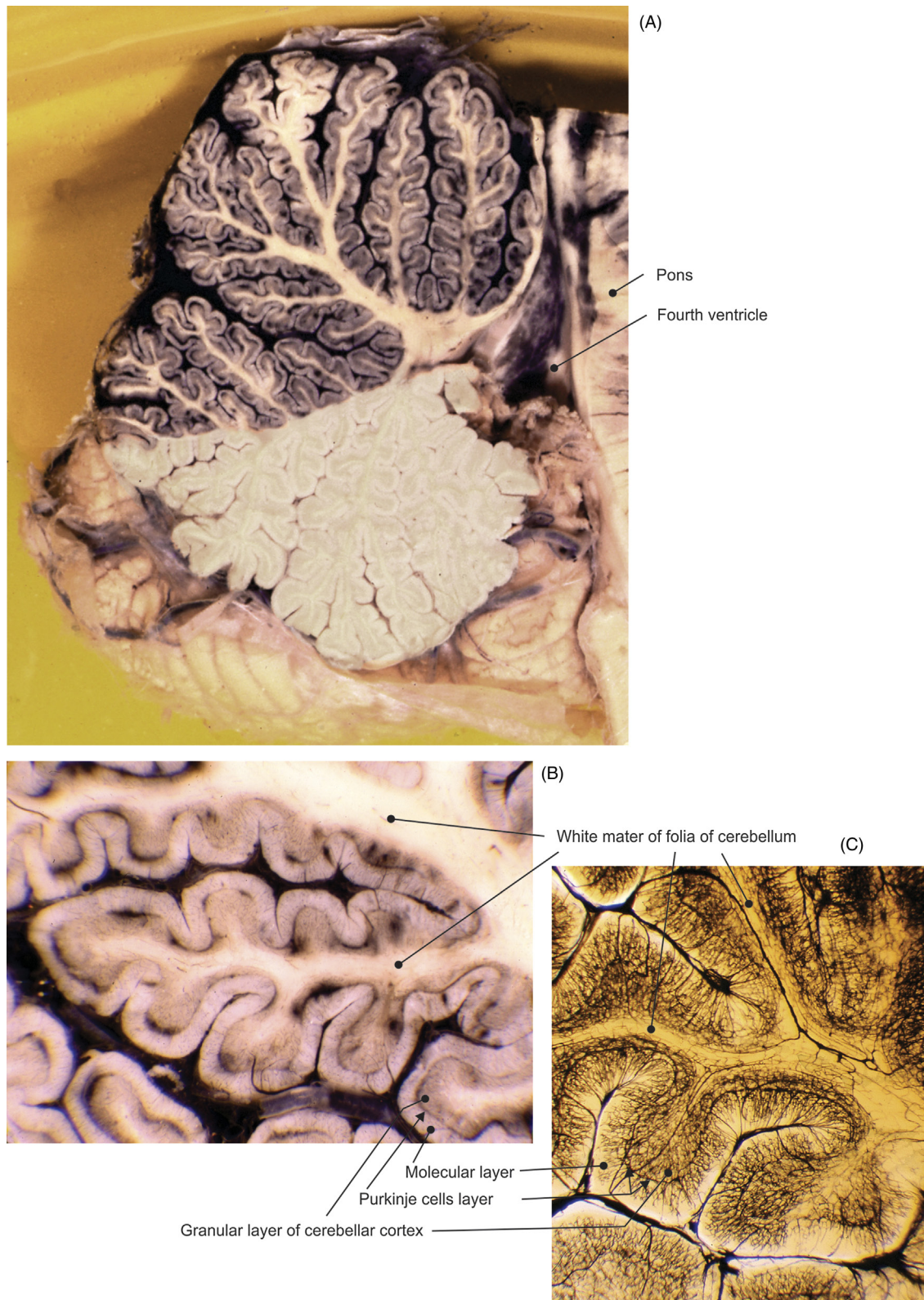


FIGURE 8.10 Selective injection of India ink-gelatin mixture in the superior cerebellar artery. (A) Midsagittal section of the cerebellum, (B) detail, and (C) cleared specimen.

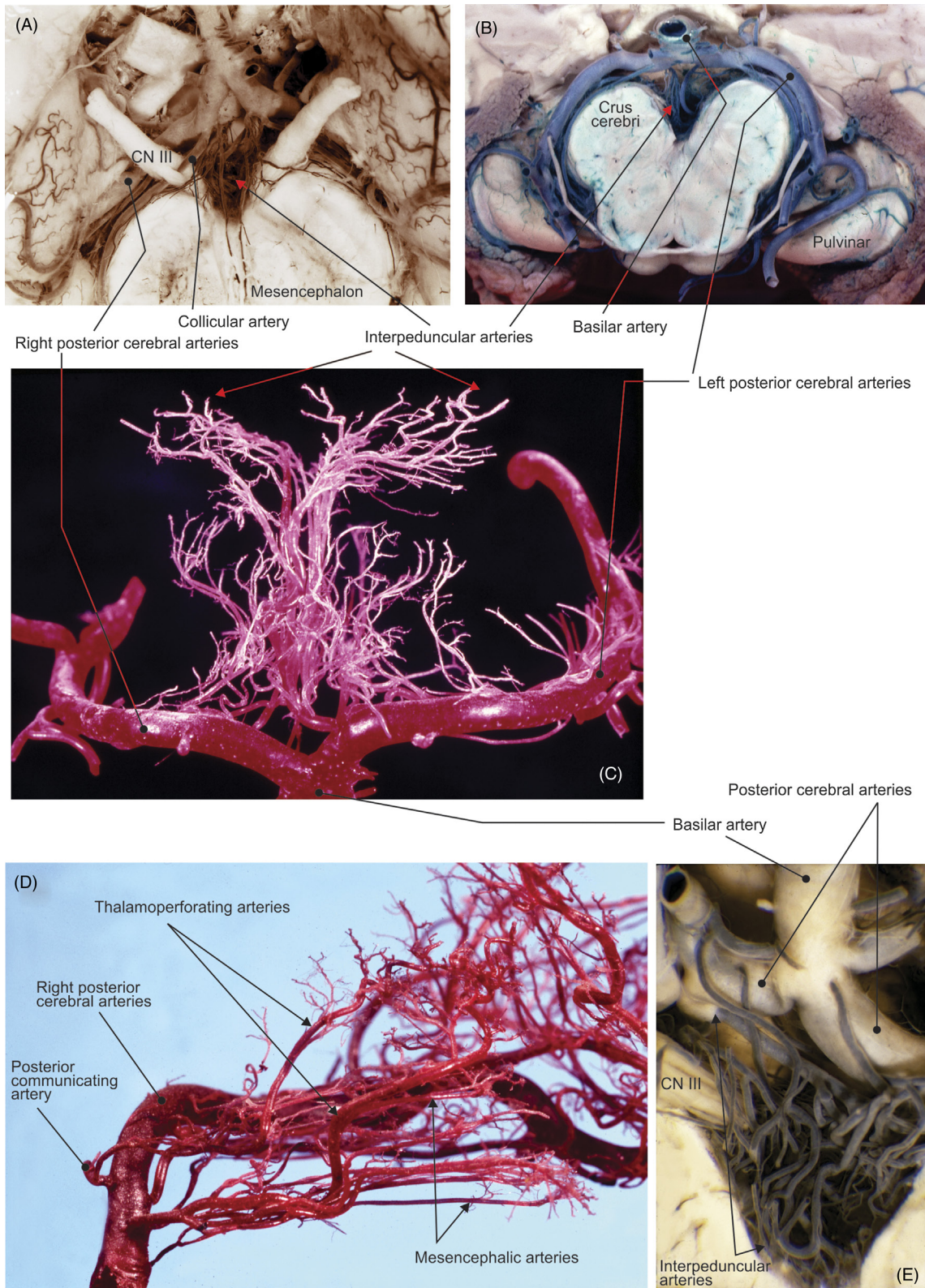


FIGURE 8.11 Interpeduncular branches of the posterior cerebral artery. (A, B, E) Basilar artery lifted from brainstem (India ink–gelatin). (C) Anterior view (corrosion cast) and (D) view from the medial side (corrosion cast).

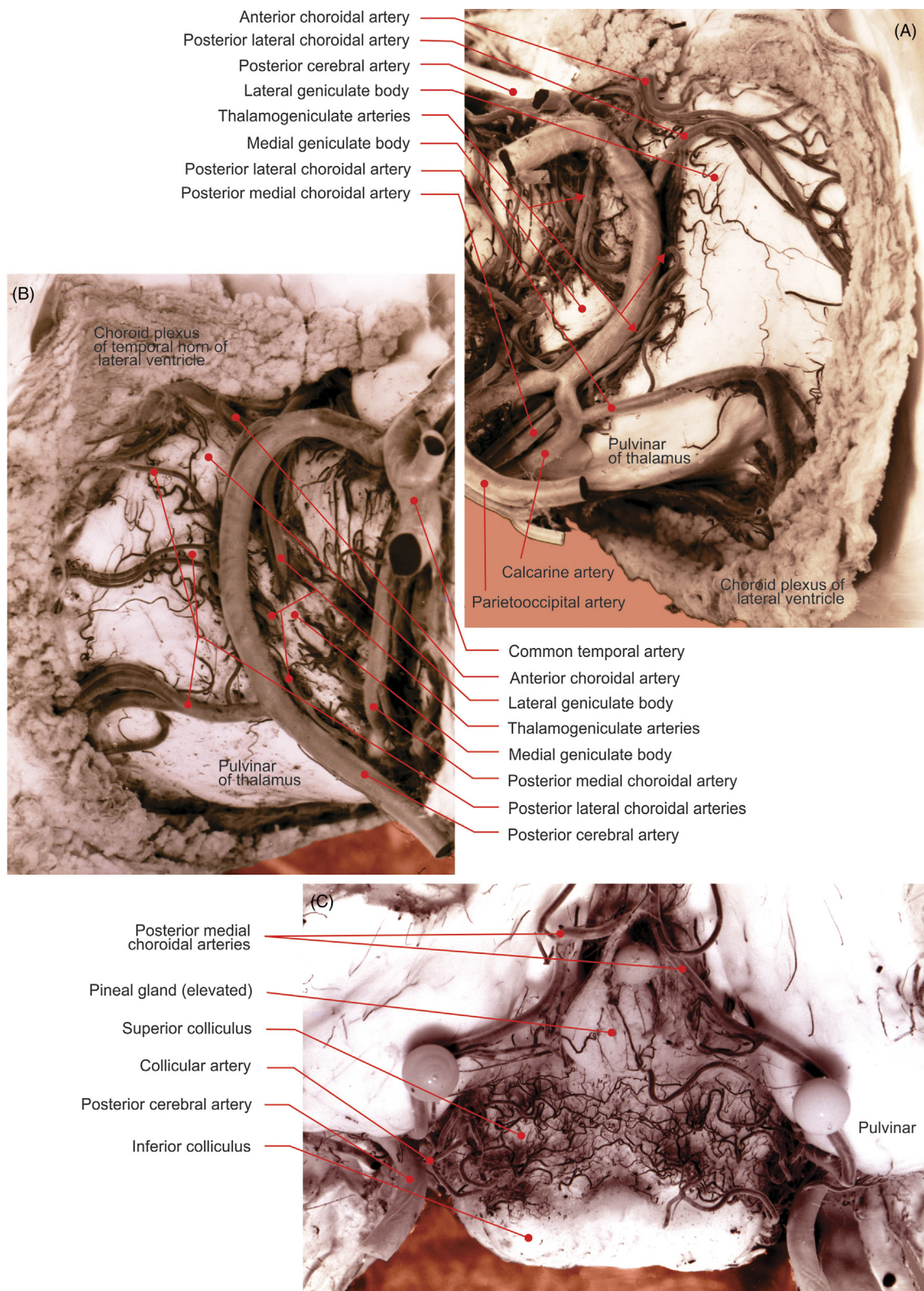


FIGURE 8.12 (A) Left and (B) right posterior cerebral arteries and branches (India ink–gelatin). (C) Mesencephalon: arterial network around the superior colliculi (India ink–gelatin preparation).

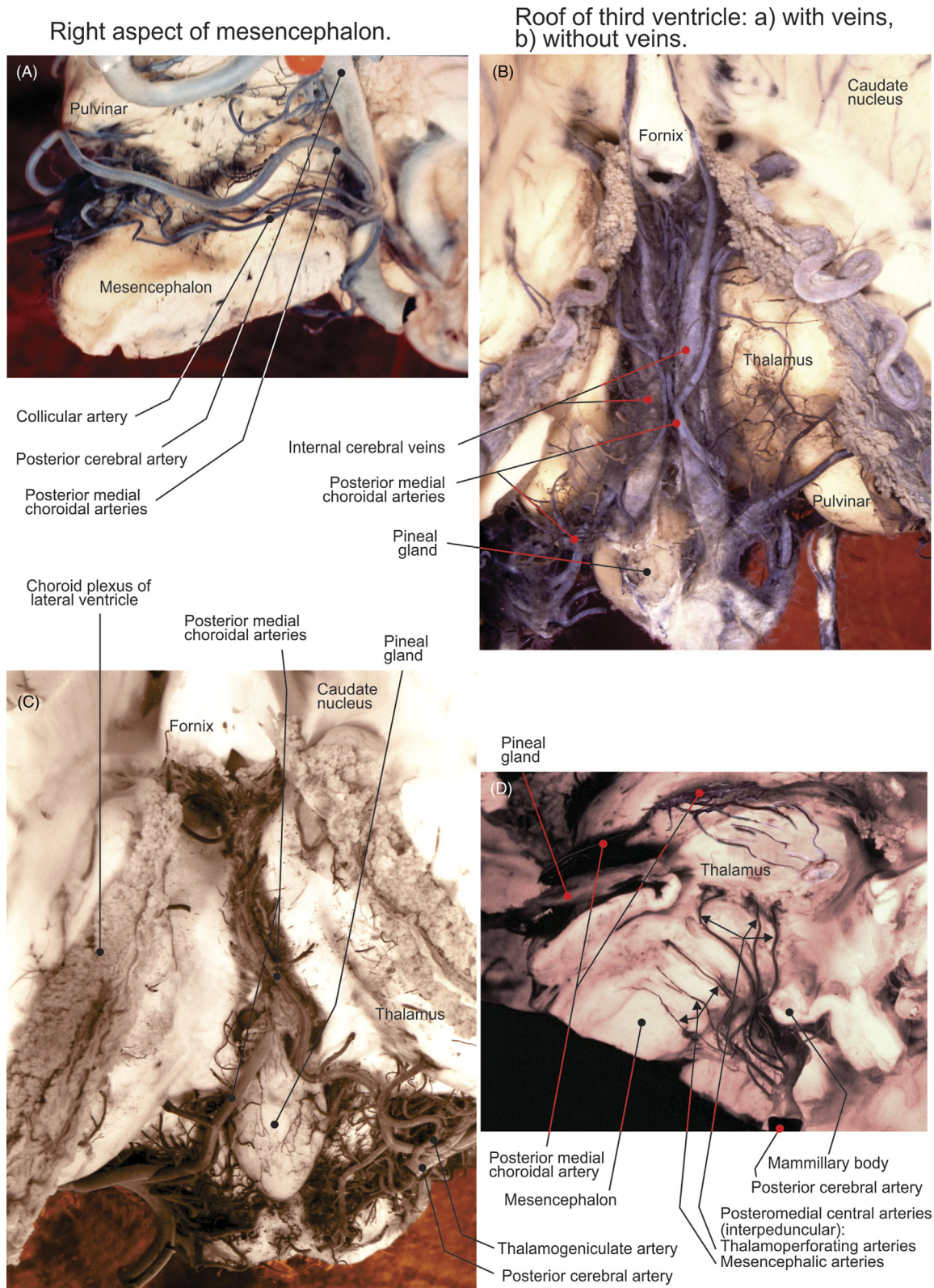


FIGURE 8.13 (A) Right aspect of the mesencephalon. (B–C) Roof of the third ventricle: (B) with veins and (C) without veins. (D) Midsagittal section of the brainstem.

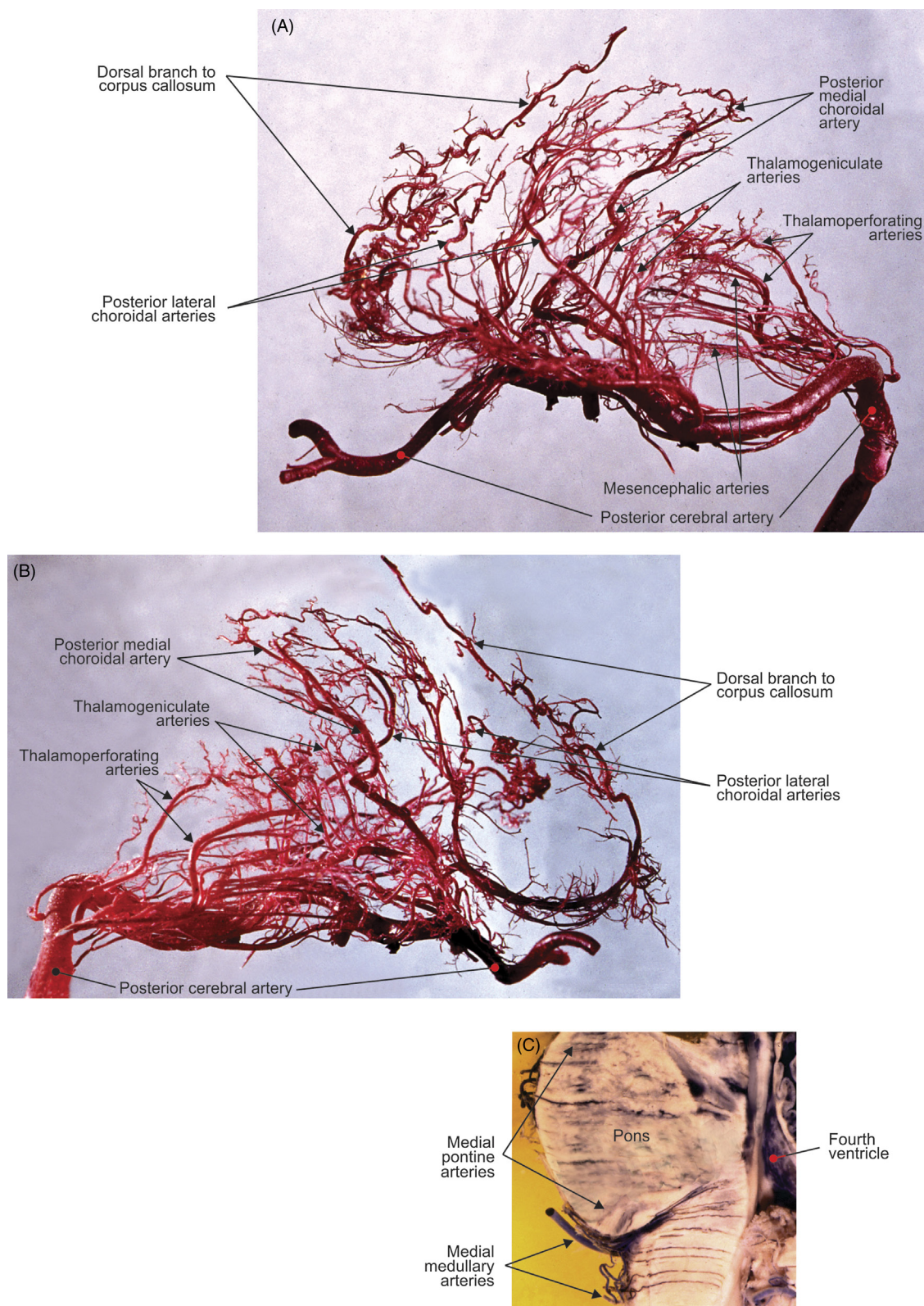


FIGURE 8.14 Deep branches of the posterior cerebral artery: view of the right artery from (A) outside and (B) inside (corrosion casts). (C) Mediosagittal section of brainstem (India ink–gelatin preparation).

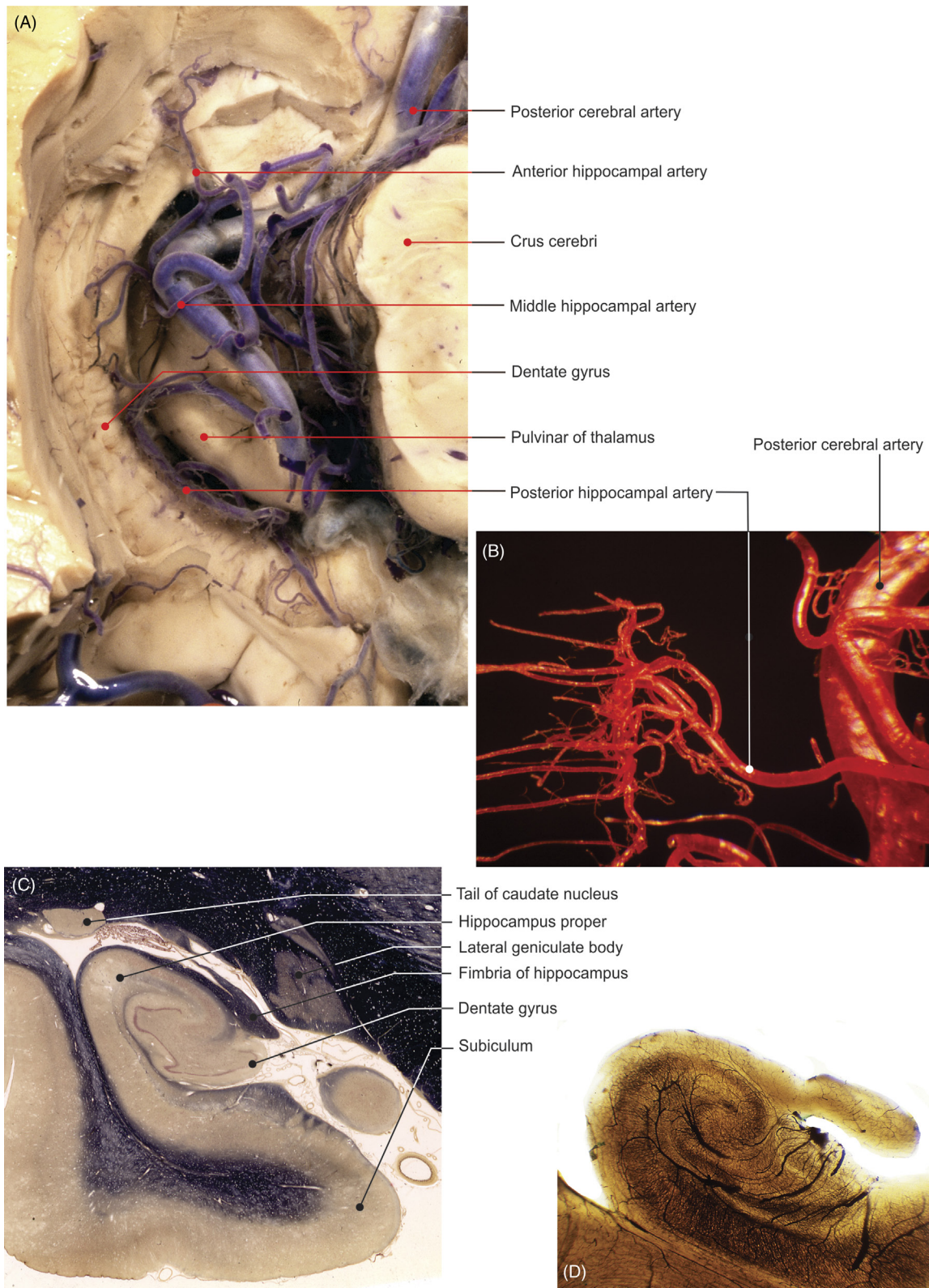


FIGURE 8.15 Hippocampal vascularization. (A) Dissection, (B) corrosion cast, (C) histologic slide, and (D) view of blood vessels of cleared transverse section.

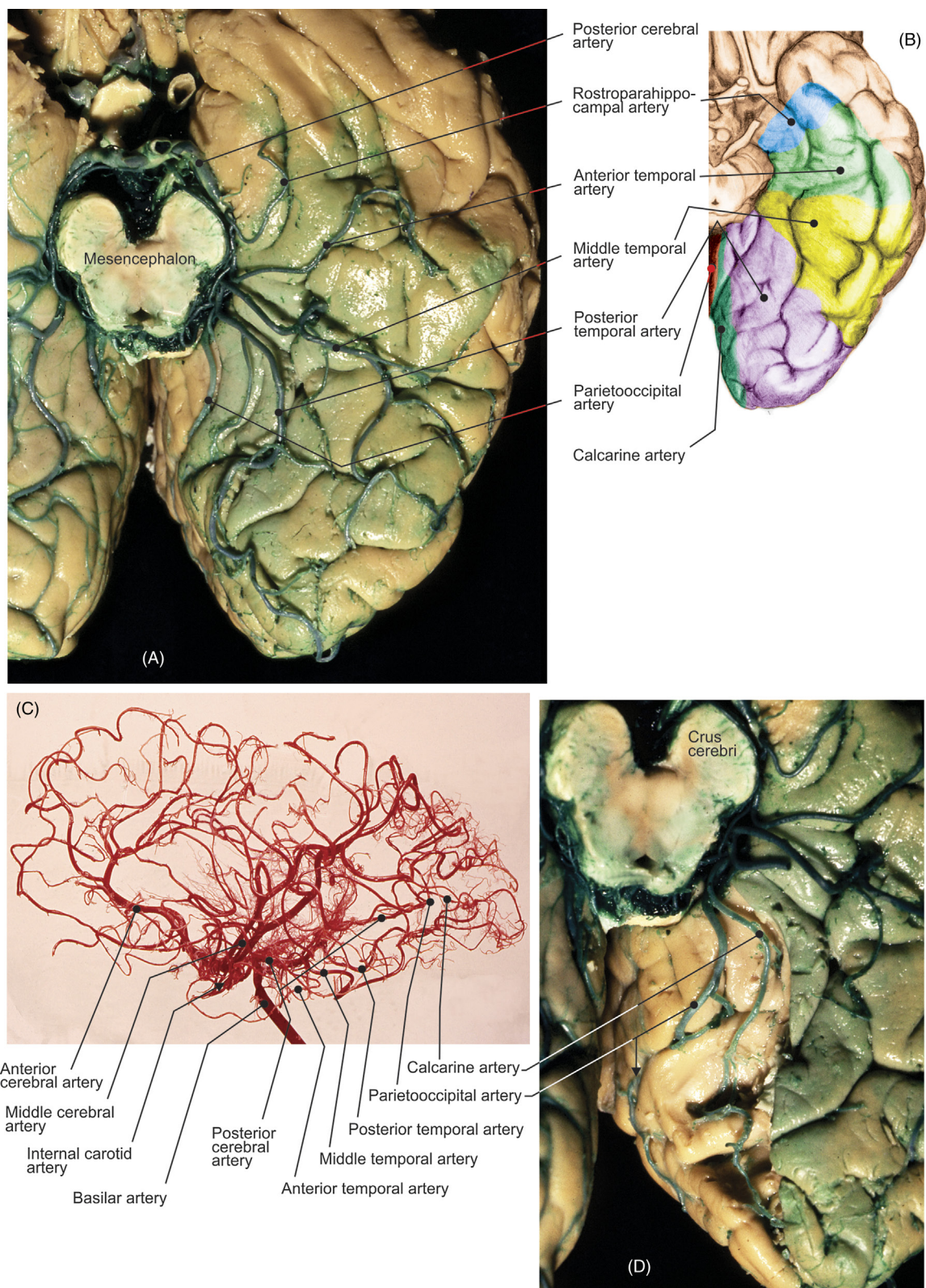


FIGURE 8.16 Cortical branches of the posterior cerebral artery: (A) India ink-gelatin preparation and (B) illustration. (C) Cortical branches of the cerebral arteries, view from outside (corrosion cast). (D) Calcarine sulcus open.

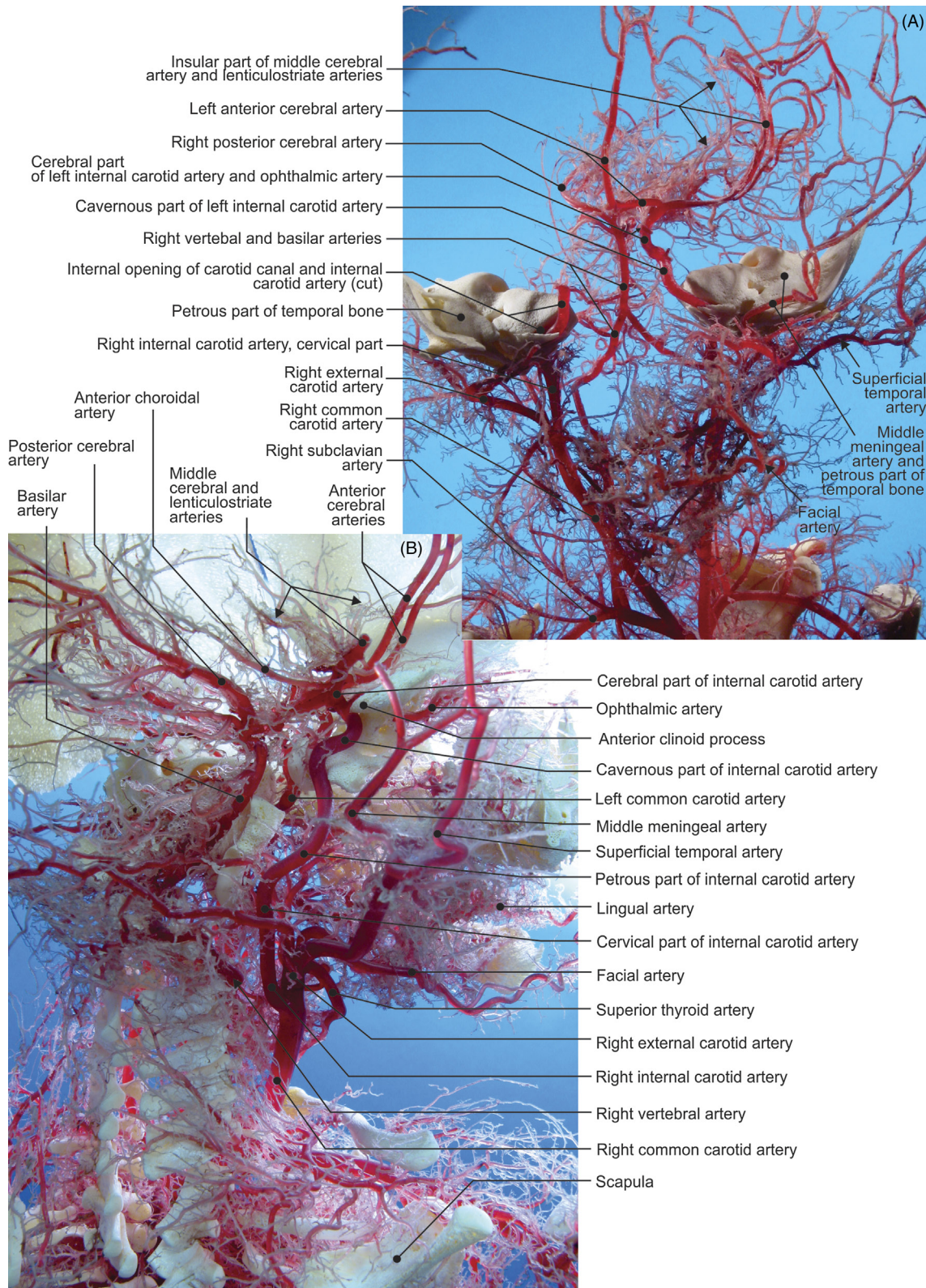


FIGURE 8.17 Fetal internal carotid artery (corrosion casts). (A) View from the front and (b) from the right.

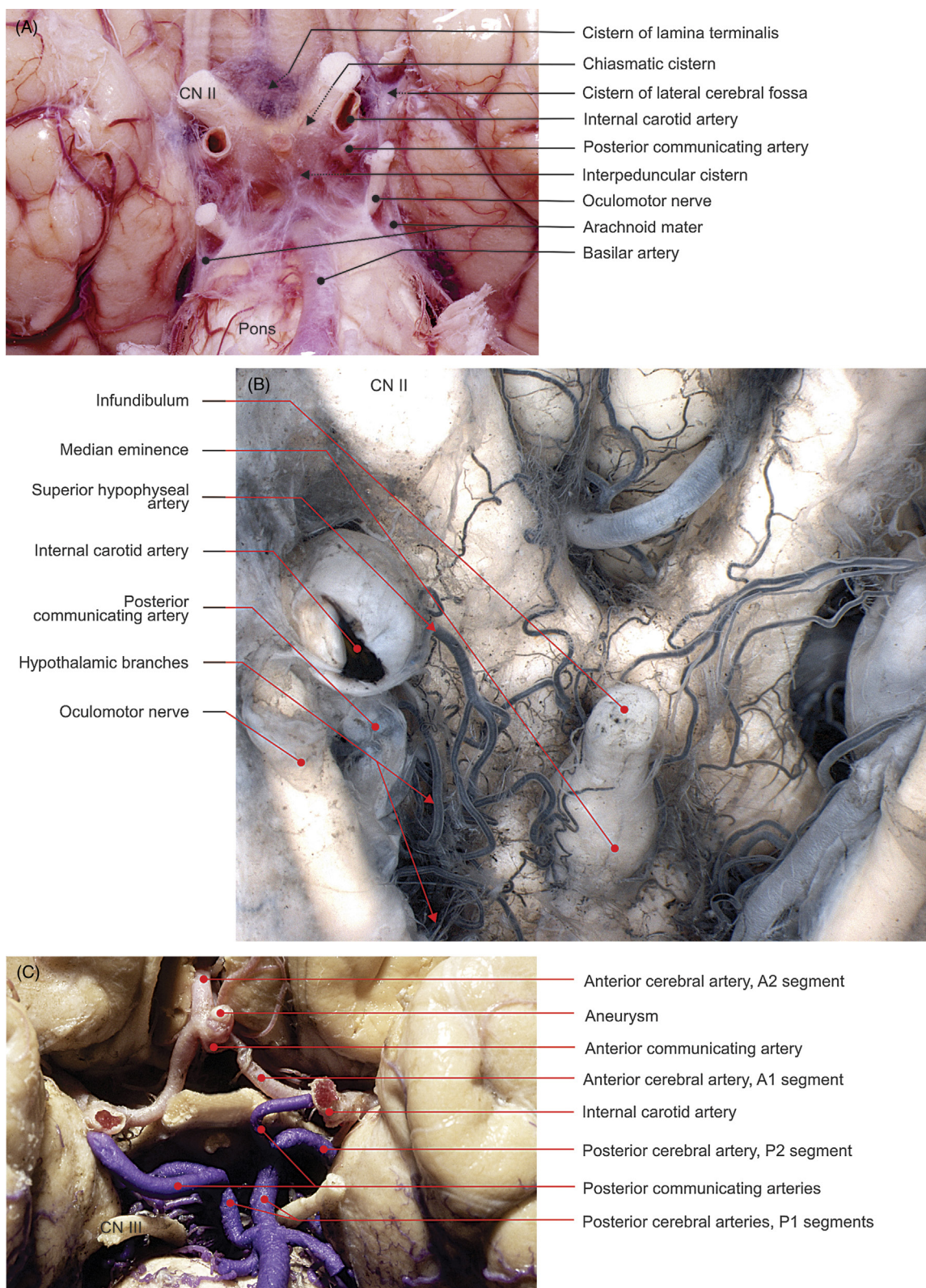


FIGURE 8.18 (A) Optic chiasm, native preparation. (B) Arteries of the optic chiasm and hypothalamus, India ink–gelatin preparation. (C) Cerebral arterial circle of Willis, silicone.

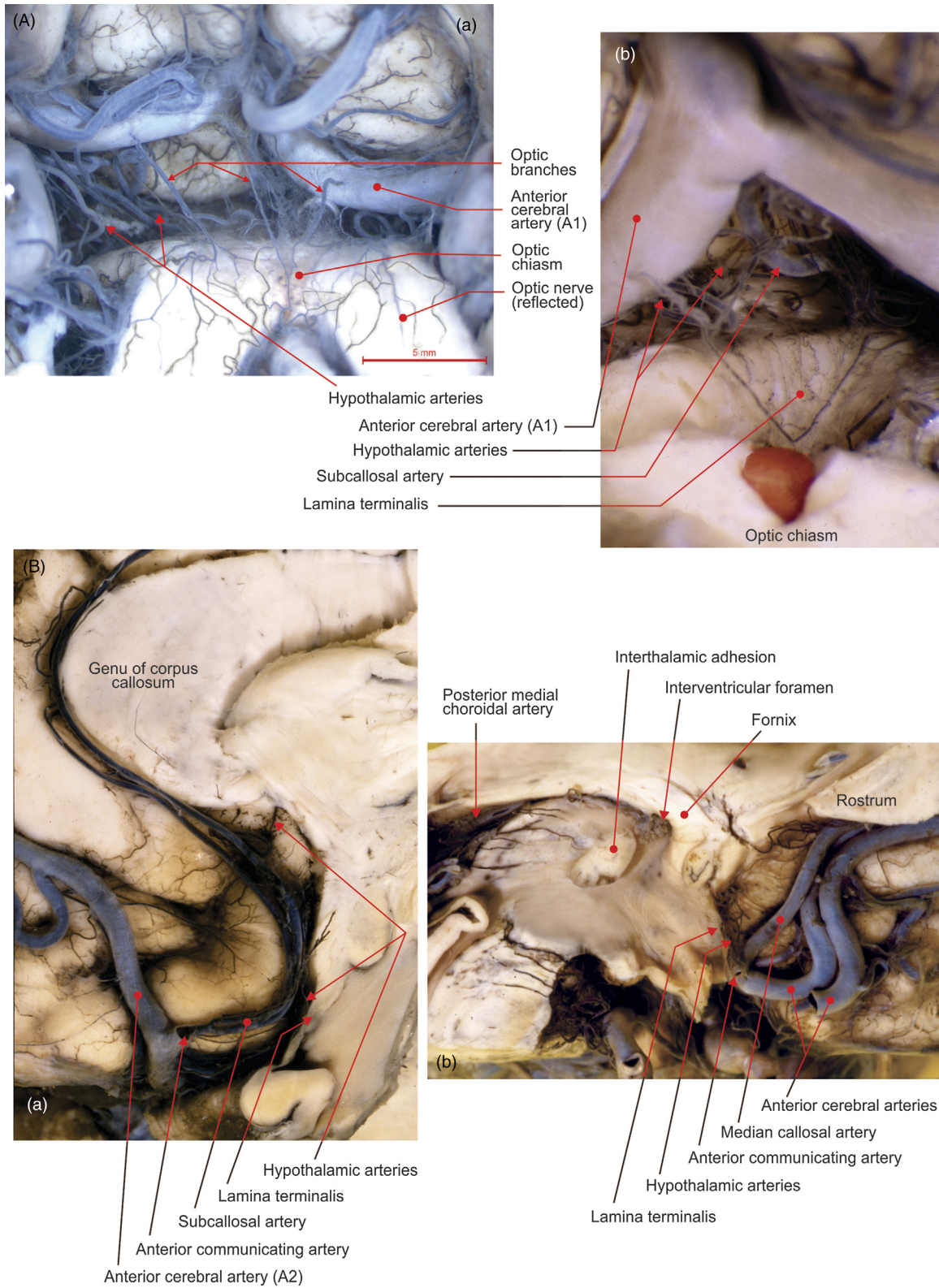


FIGURE 8.19 (A) (a) Lamina terminalis and (b) optic chiasm viewed from below (India ink–gelatin preparations). (B) (a–b) Midsagittal sections of the lamina terminalis (India ink–gelatin injection).

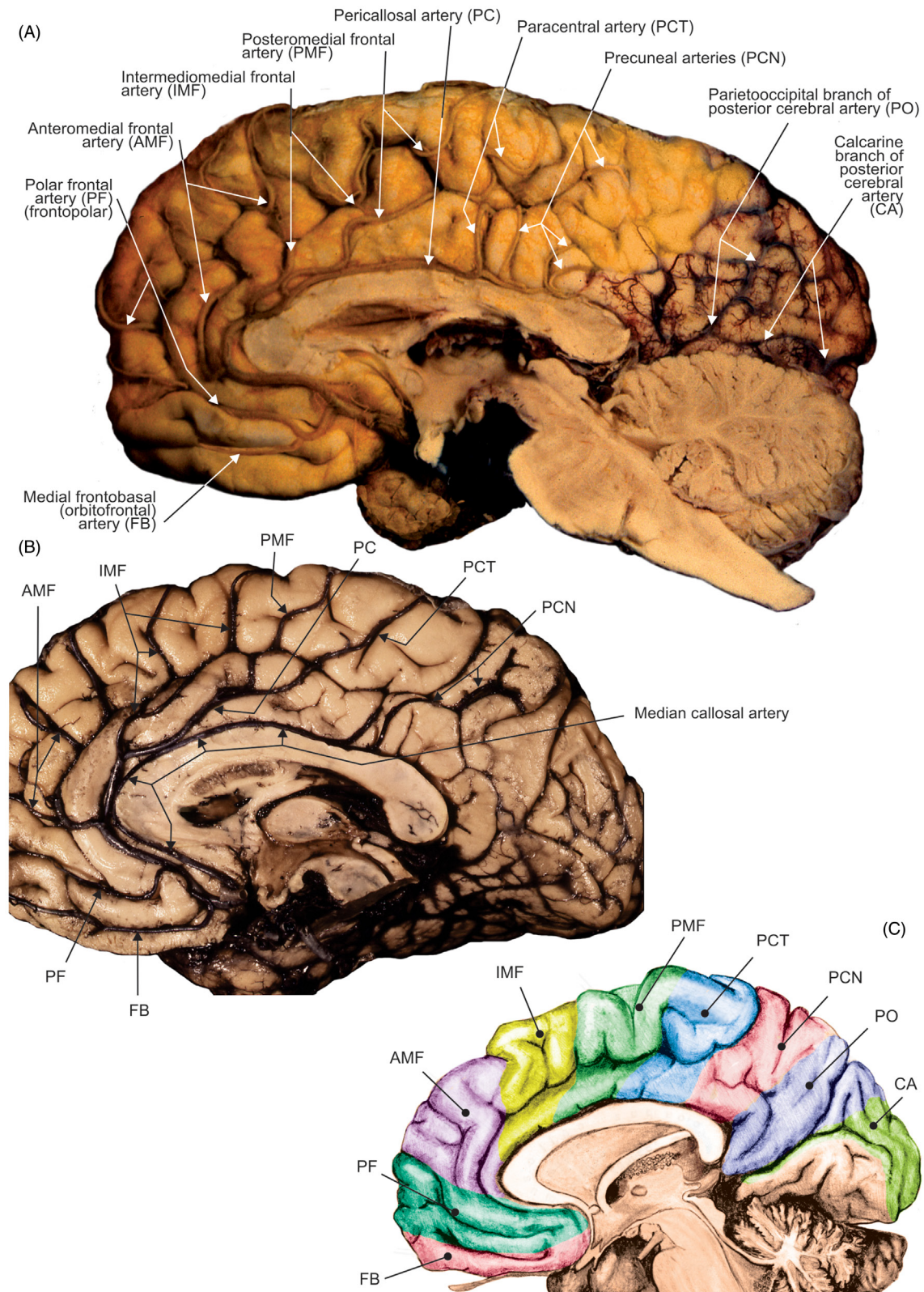


FIGURE 8.20 Cortical branches of the anterior cerebral artery on the medial aspect of the right cerebral hemispheres (India ink–gelatin preparations). (A–B) Dissections and (C) illustration.

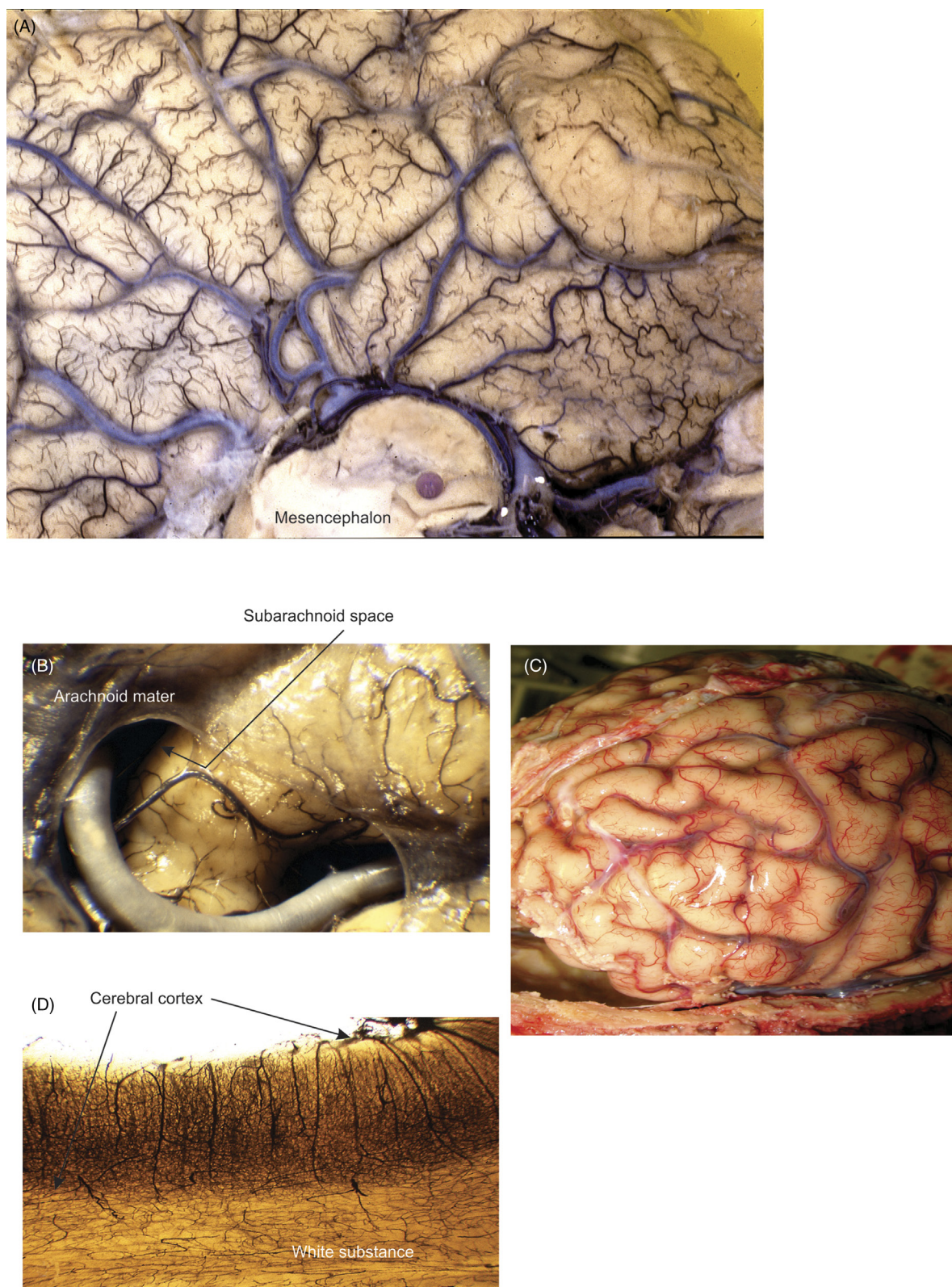


FIGURE 8.21 Vascularization of the cerebral cortical layer (India ink-gelatin). (A) Inferior view, (B) detail, (C) native sample, and (D) view of the cleared cortical arteries.

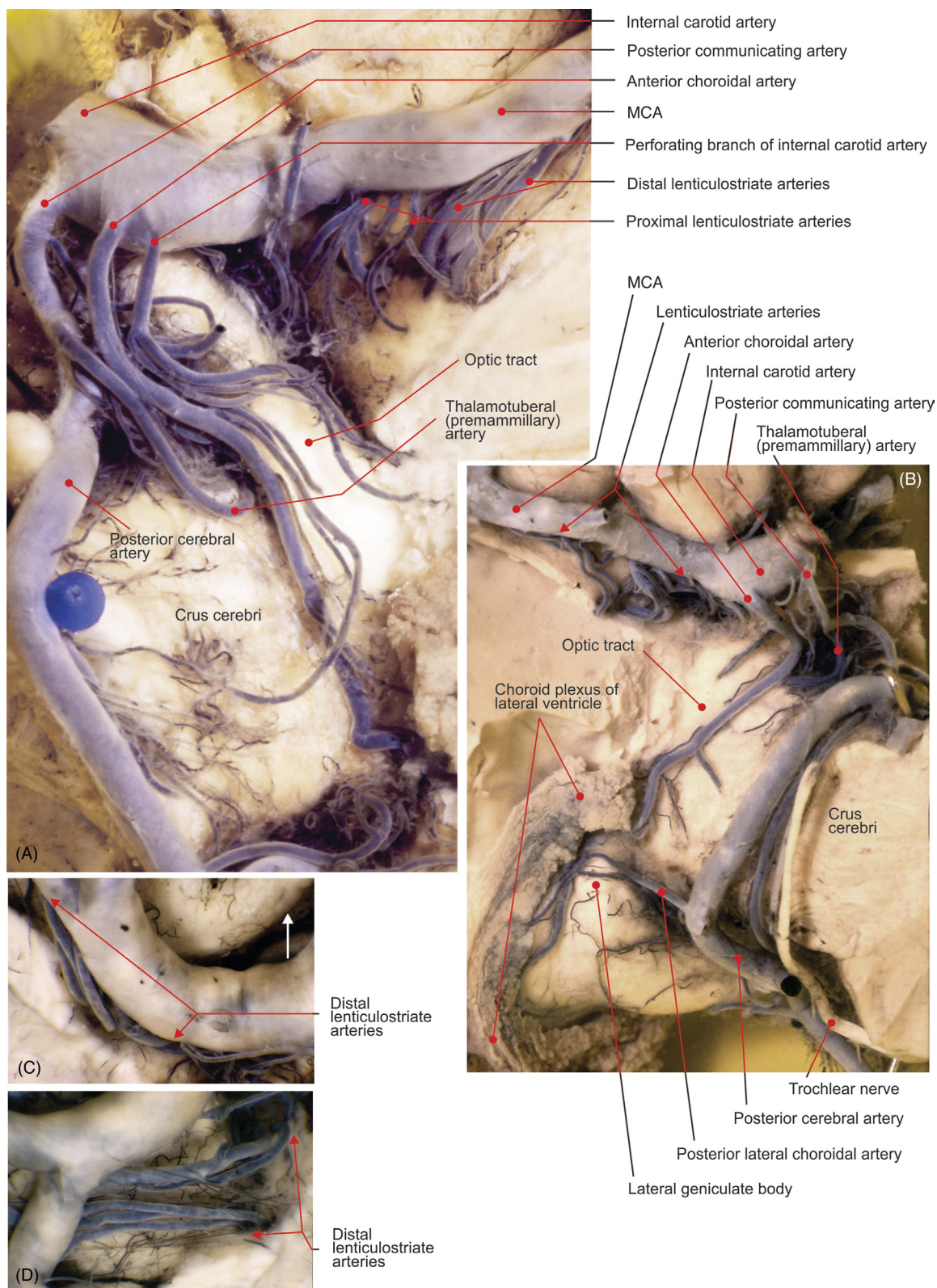


FIGURE 8.22 (A–B) Deep part of the (A) left and (B) right hemispheres after the removal of the temporal lobe. (C–D) Trunk of the middle cerebral artery (MCA) (M1 segment), view from below: (C) before and (D) after reflection of the artery.

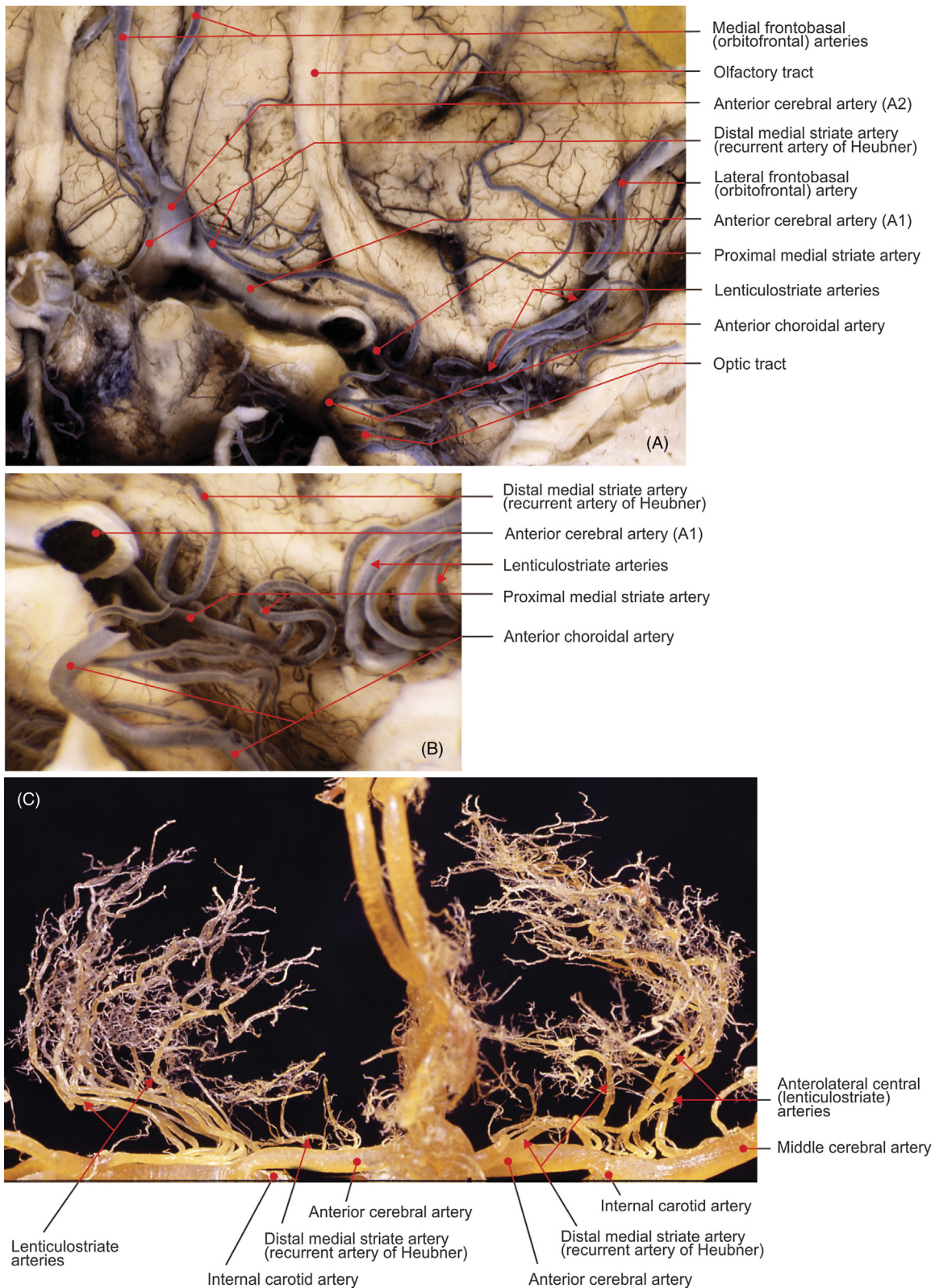


FIGURE 8.23 (A) Anterior perforated substance and (B) details, after the removal of the temporal lobe. (C) Corrosion cast of the anterior perforating arteries, view from the front.

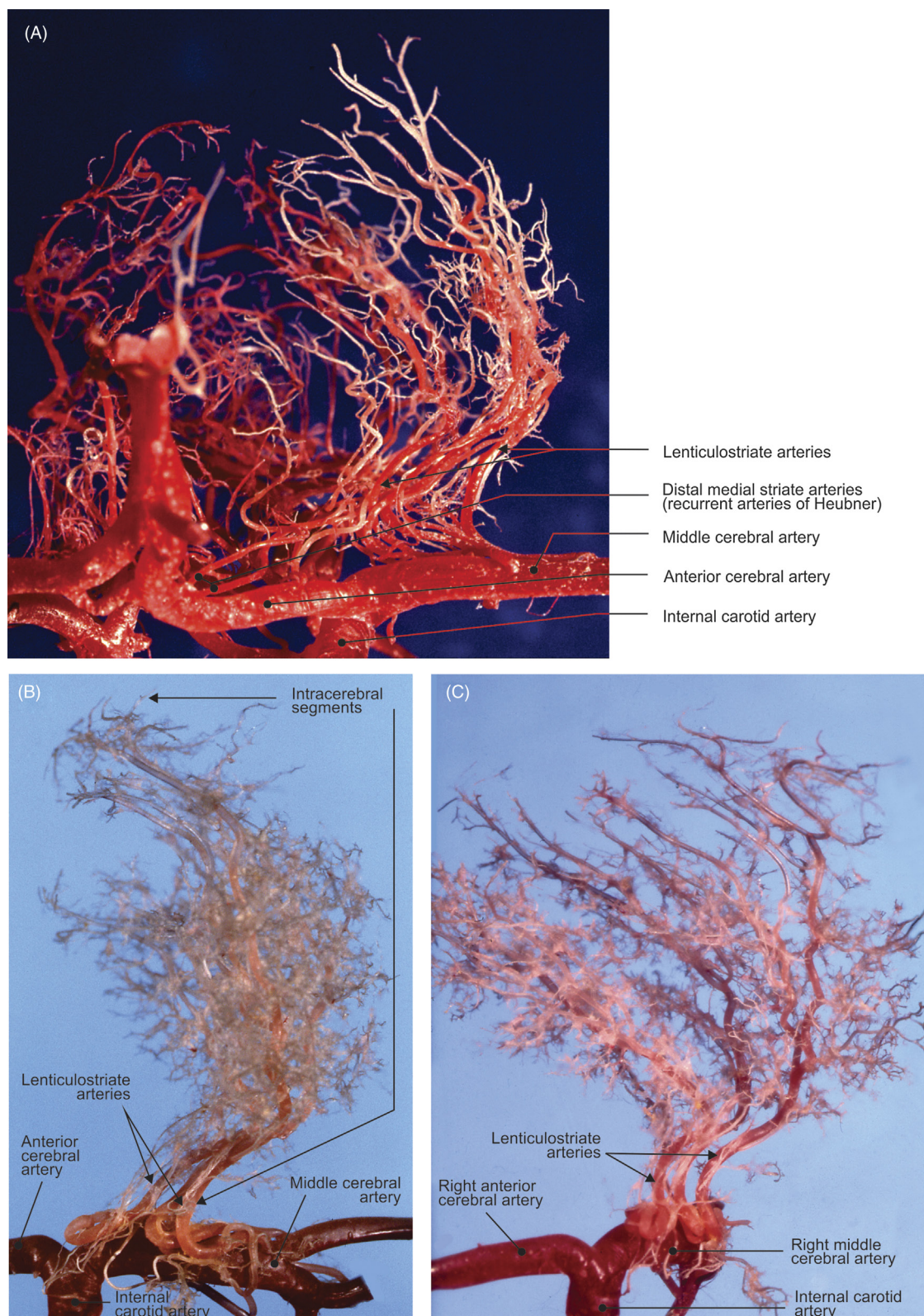


FIGURE 8.24 (A) Corrosion cast of the anterior perforating arteries, view from the front. (B–C) Corrosion cast of the lenticulostriate arteries viewed from (B) behind and (C) medial side.

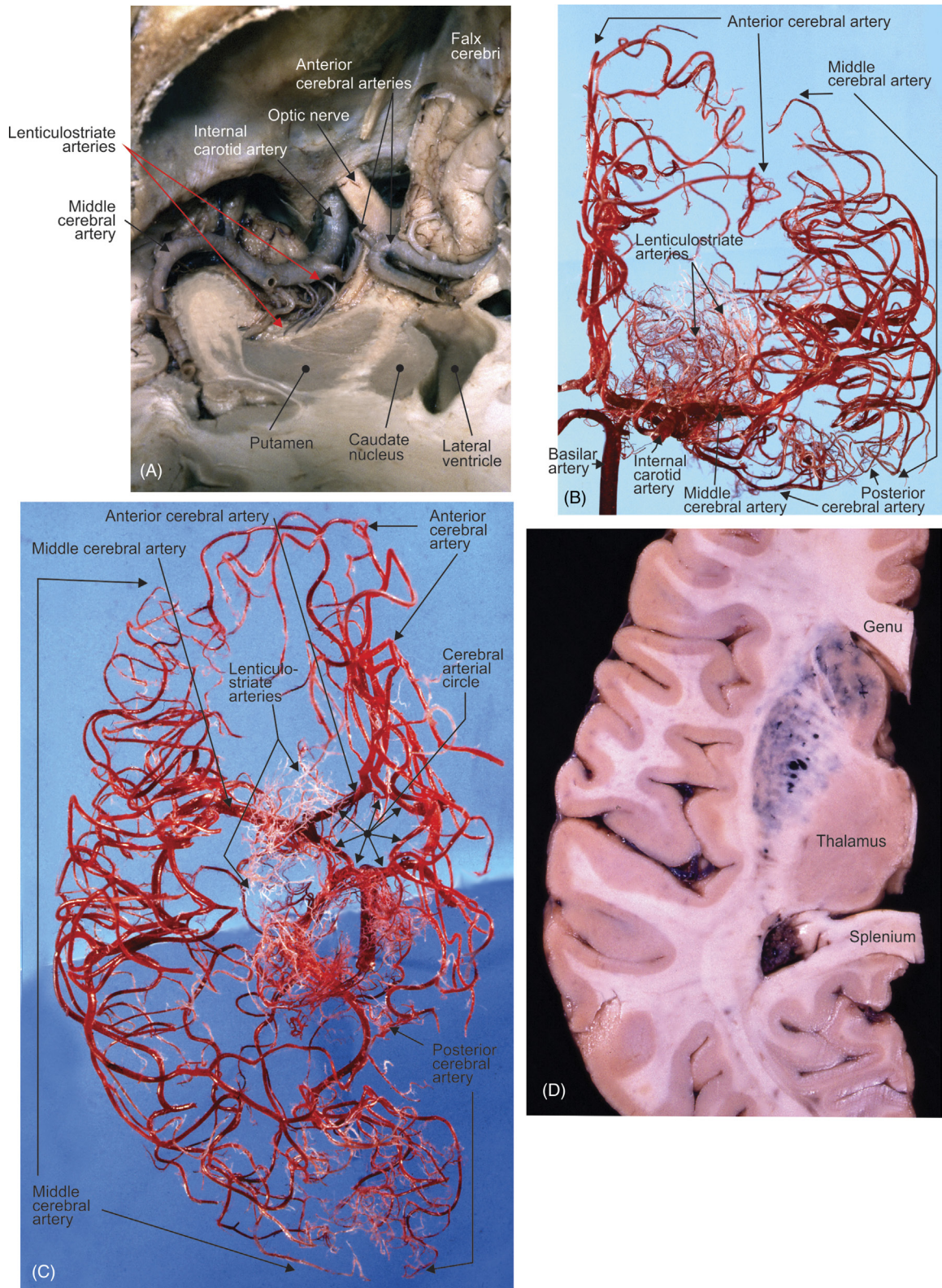


FIGURE 8.25 Left lenticulostriate arteries. (A) View from above after the removal of the frontal lobe (corrosion cast), (B) view from the front, (C) from above (corrosion cast), and (D) the transverse section of hemisphere after selective injection of arteries with India ink–gelatin mixture.

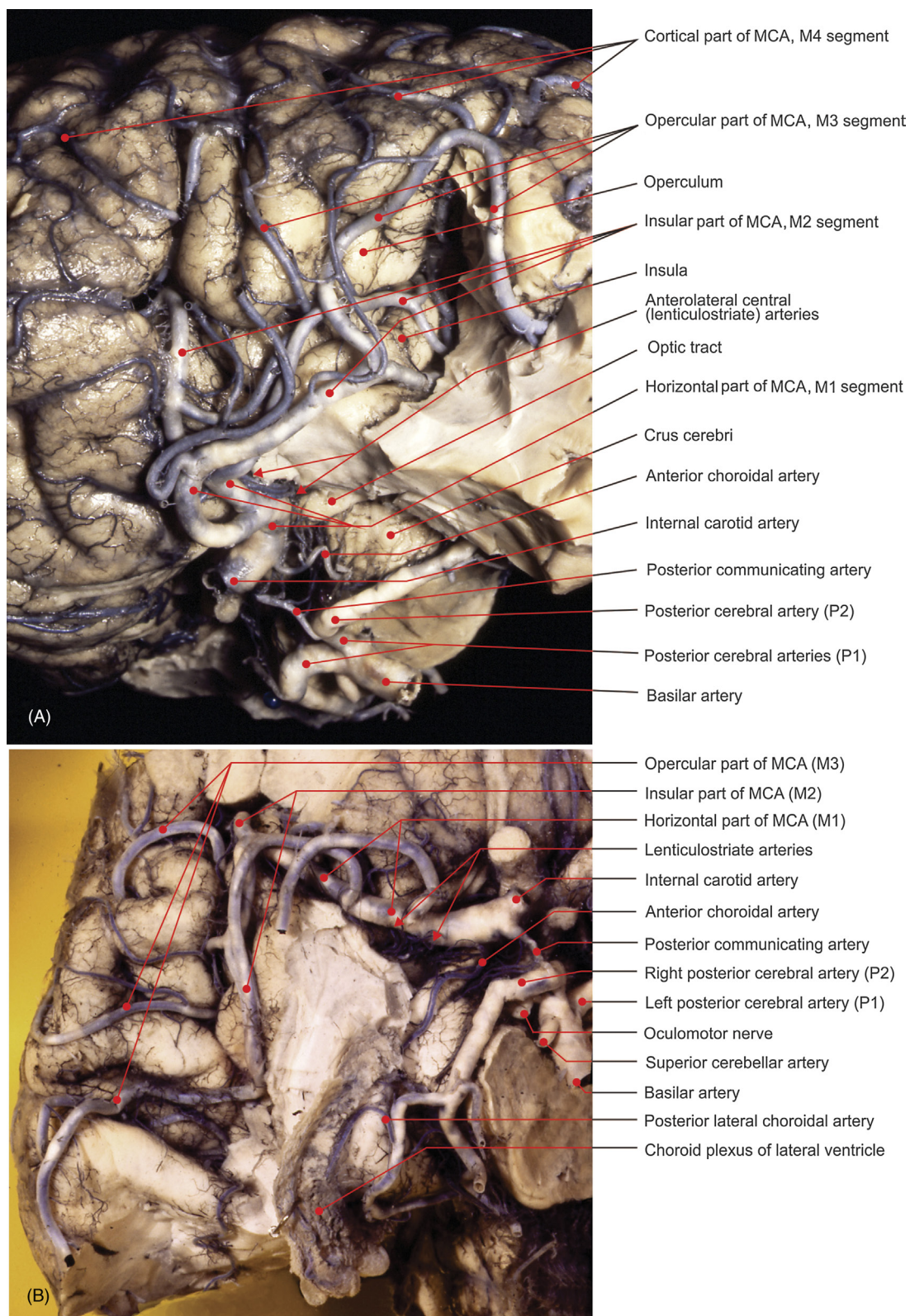


FIGURE 8.26 Pathway and branching of the (A) left and (B) right middle cerebral arteries (MCA) after the removal of the temporal lobes (India ink–gelatin).

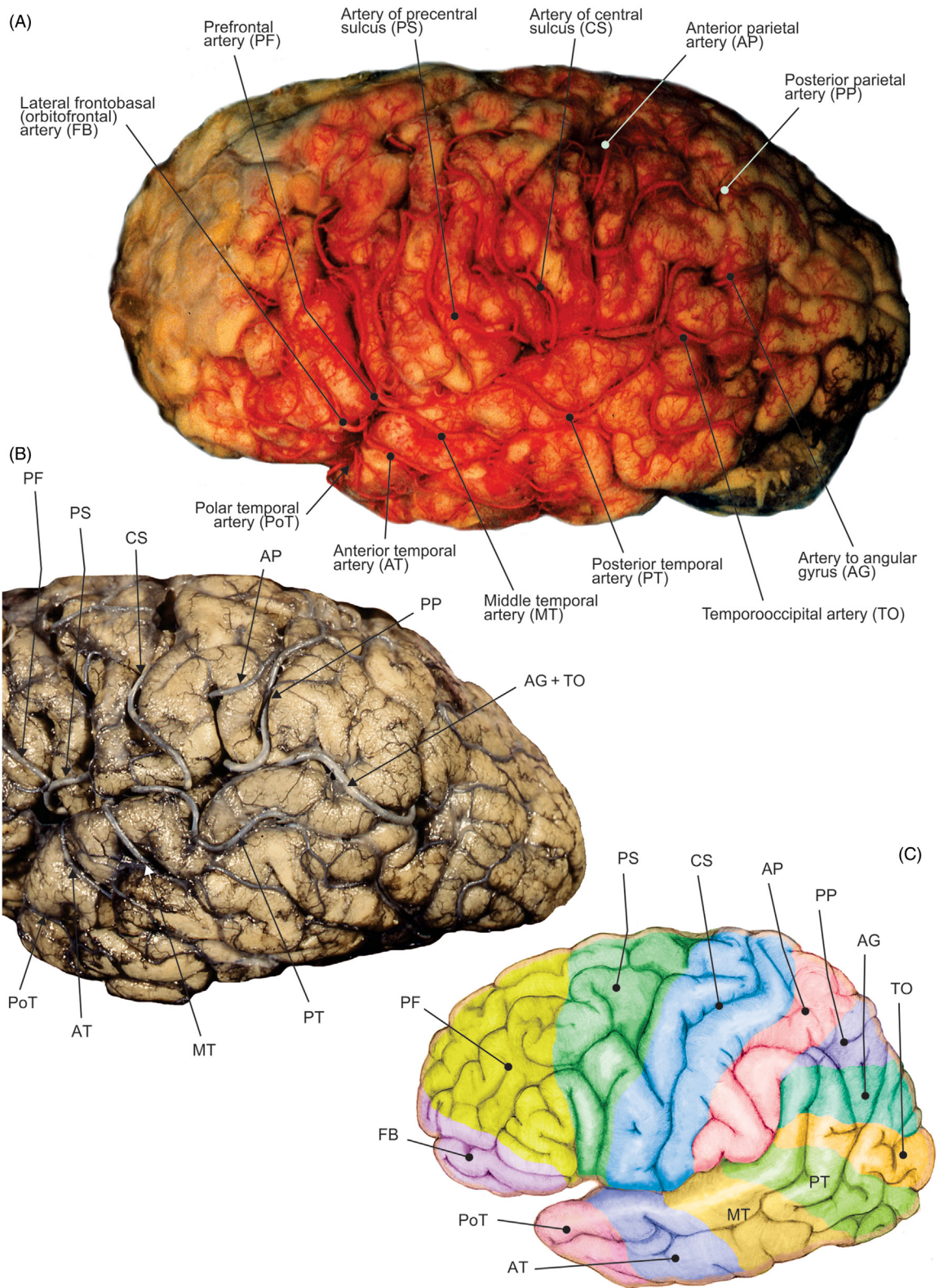


FIGURE 8.27 Cortical branches of the middle cerebral artery (India ink-gelatin): view of the superolateral aspect of the left hemisphere. (A–B) Dissections and (C) illustration.

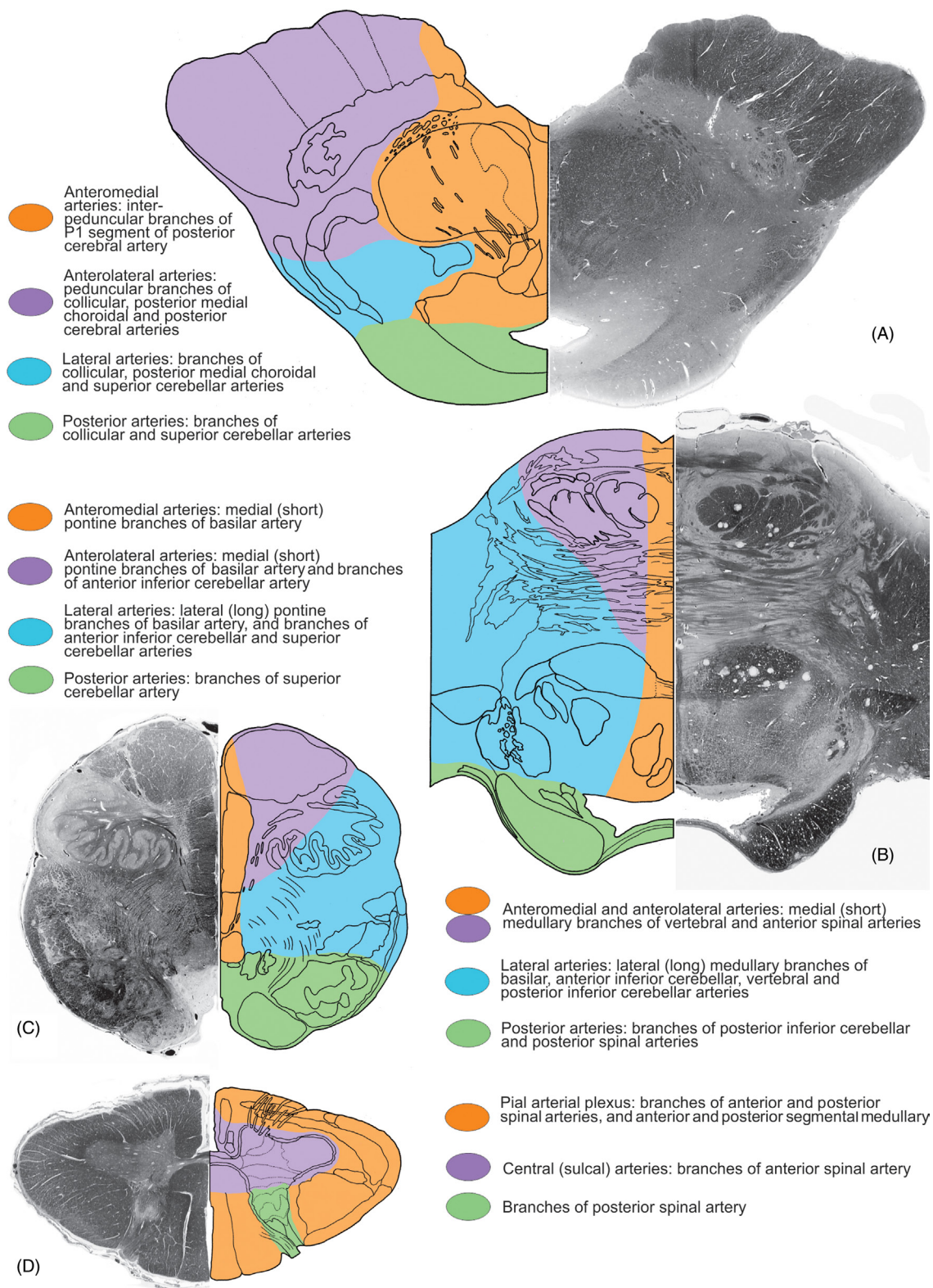


FIGURE 8.28 Vascular territories. (A) Mesencephalon. (B) Pons. (C) Medulla oblongata. (D) Spinal cord.

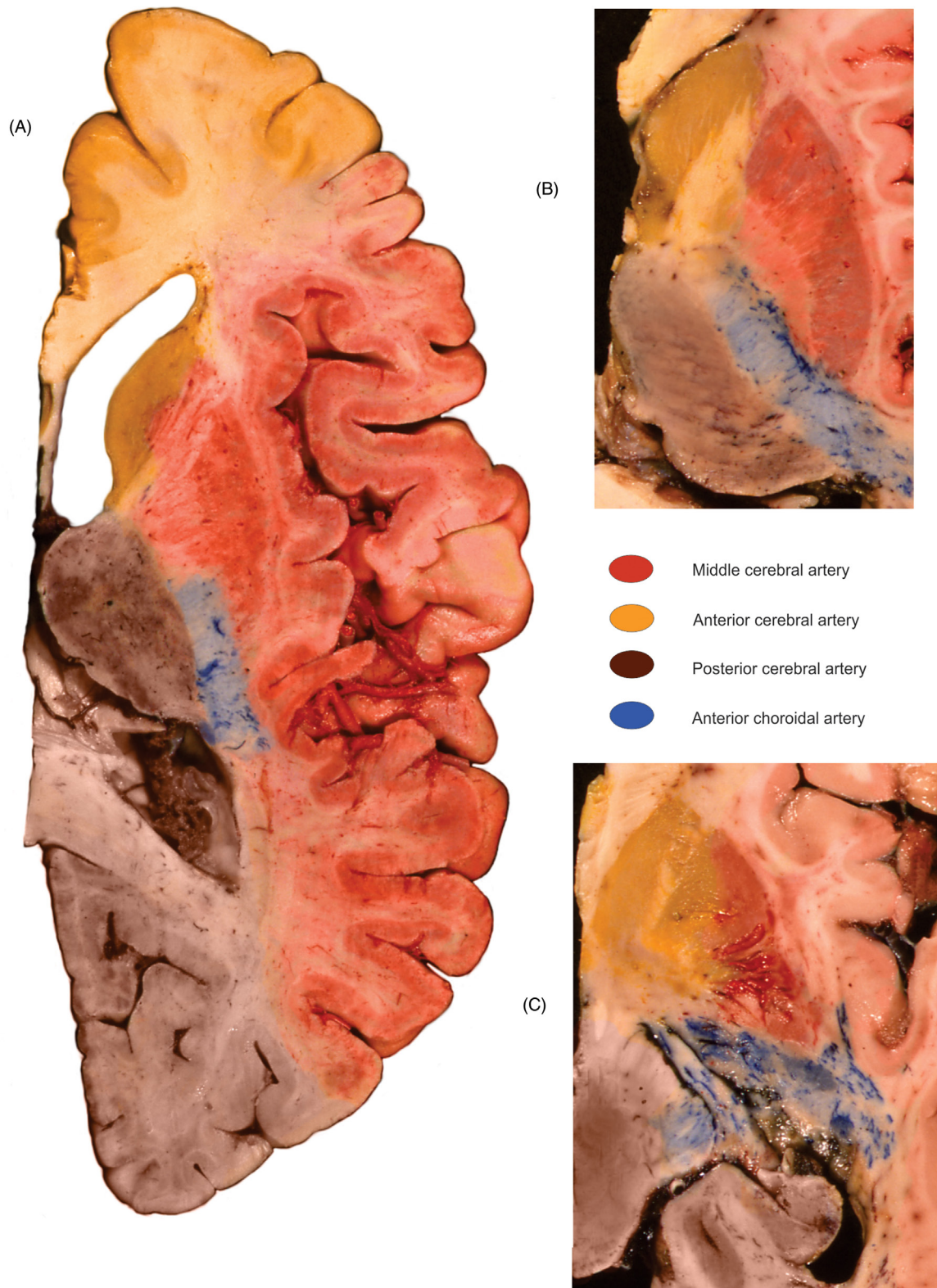


FIGURE 8.29 Vascular territories on the transverse sections of the cerebral hemisphere. (A) The level of dorsal thalamus, (B) midlevel of thalamus, and (C) level ventral of thalamus.

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